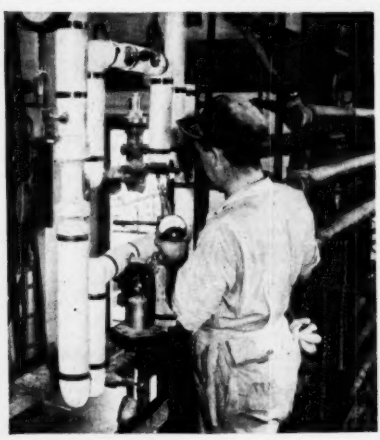
Chemical Industries Week

February 10, 1951



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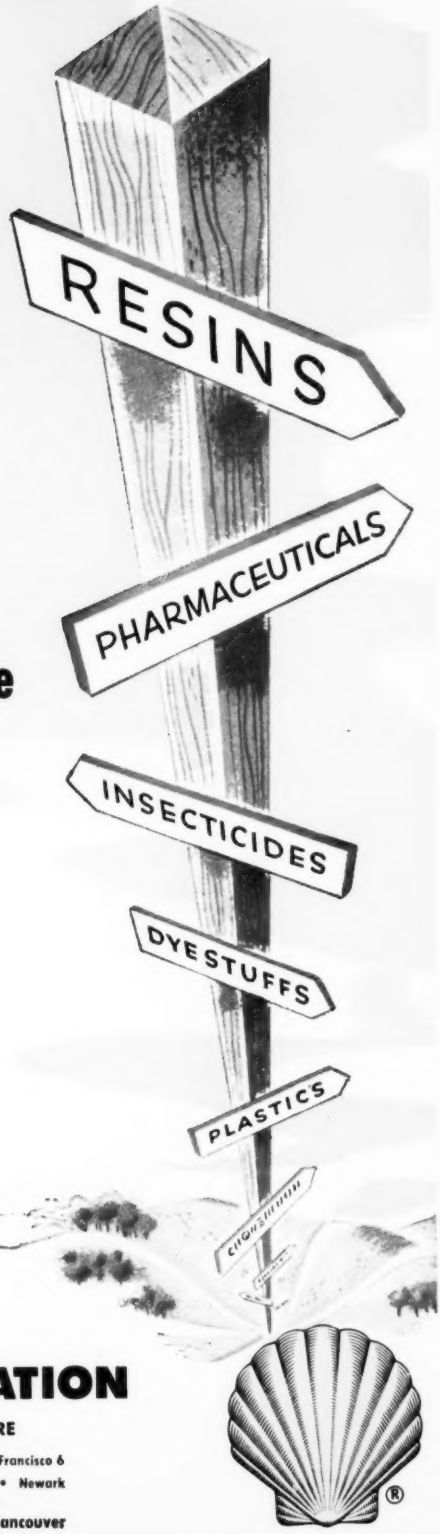

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MANAGING EDITOR . Howard C. E. Johnson

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OPINION . . . . . .

Week-end Reading

To The Editor: Congratulations on Chemical Industries Week.

You have done a top notch job in combining the ideas of *Chemical Industries* and *The Chementator* into a paper which fills a real need.

Your reporting staff certainly knows its stuff, for I note in Issue No. 1 a number of items that were known to only a few people in the industry. . . .

However, from the standpoint of a hard-pressed reader, I am wondering if you can mail it out on some other day. . . . It makes a lot of week-end reading. How about fixing it to arrive Tuesday? That appears to be a blank on the journal schedule. . . .

Robert B. Wittenberg
Easton, Pennsylvania

CIW's editors, and its 76 ears-wide-open correspondents, blushingly appreciate Reader Wittenberg's comments.
We plead guilty to coveting the week-end reading time of busy chemical executives.—Ed.

Popcorn Packaging

To The Editor: "Good old fashioned popcorn now has a new job . . . . as a packing material for fragile shipments." (CIW, Jan. 20, p. 41) *Not so new*, as many packages were shipped overseas during the last war using popcorn and/or "Oke Dokes" as packaging to protect such fragile shipments as cakes, bottled goods and other breakable materials. . . . .

S. M. Linick
Linick Chemical Company
Chicago, Illinois

True. Many a "bottle" was packed in a loaf of bread during the war (and perhaps in the Prohibition era) and neatly tagged as "Scotch Bread" for the benefit of postal inspectors.

The news, of course, is "honorable graduation" of such ingenuity to the ranks of commerce.—Ed.

Patent Digests Again

To The Editor: Congratulations on your initial issue of Chemical Industries Week. This magazine has been read with great interest and I enjoyed both its subject matter and its attractive format.

In the past, we have always looked forward with interest to your monthly publications and have found particularly useful the section on "New U. S. Patents." We would like to know whether you plan to continue publication of this section at regular intervals.

J. F. Wilkes
Dearborn Chemical Company
Chicago, Illinois

CIW considered the matter carefully before patent digests were dropped, intended instead to follow new patents closely, report on significant issues.

We would welcome, however, all pro and con votes from our readers so that we may have a fresh basis for reappraisal of our initial decision. —Ed.

Loose Phrasing

To The Editor: At the bottom of page 12, the January 20th issue, you state that more than 25 per cent of the potash made in the United States goes into television receivers.

For your information, about 90 per cent of the potash produced in the United States goes into fertilizers. Evidently you left out some qualifying words.

H. I. Smith
Chief, Mining Branch
United States Department
of the Interior
Washington, D. C.

Roundly chided by Reader Smith (who certainly ought to know) and many others, CIW renounces its reliance on Webster and sundry glassmakers, promises not to use the word "potash" in referring to potassium carbonate. —Ed.

Synthetic Wool

To The Editor: I think your article (Successors to Sheep, Jan. 20) is very interesting and what you say about the possibilities of the various synthetic fibers replacing wool constitutes a definite possibility. I do think that the regenerated protein fibers constitute a rather minor threat to wool for none of them has adequate wet strength, although they do induce properties in certain wool fabrics which are desirable when used as a minor fraction of a blend.

You are quite right in emphasizing the perfectly preposterous prices which are now being charged for raw wool but, of course, it is hoped that this situation will be alleviated somewhat in the future.

There is one point which must be kept in mind in thinking about replacement of wool with synthetic

OPINION . . . . . .

fibers, namely, a property-for-property synthetic duplicate has never been created; in particular, very little success has been achieved in producing a synthetic fiber with any degree of moisture absorption or swelling which, while perhaps not being desirable in some regards, are properties which simplify the dyeing operation considerably. In other words, while I quite agree that many of the synthetics have properties which will make them adaptable to blending with wool to get wool-like fabrics, I would hardly expect a large replacement of wool with the synthetics within the next few years.

There is always a chance also, of course, that the wool growers will do some real research on their fiber which will help it meet competition.

NAME WITHHELD

Gentle Pessimism

TO THE EDITOR: . . . . With regard to the article on "silicone resins" (Jan. 27th) I wholeheartedly agree with the gently pessimistic opinion of the writer.

The excellent properties of these resins at high temperature, where other resins fail, open a limited special field for them. For a more general application in the coating industry their present price is prohibitive. This is well expressed in the article. . . .

GEORGE M. SUTHEIM
The Audio Manufacturing Corporation
Glenbrook, Connecticut

No Treatises

TO THE EDITOR: Just a line to offer my most sincere congratulations at the occasion of CHEMICAL INDUSTRIES becoming a weekly magazine.

Without doubt the decision required a lot of courage, both from the point of competition . . . and from the point of paper supply. But you have made that decision, and come up with a topnotch product: I like particularly:

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The much improved type face, text arrangement and integrated advertisements.

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WILLIAM H. SACHS
Consulting Chemist
Atlanta, Georgia

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Chemical Industries Week

BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

NEWSLETTER

Koppers Co. plant in Southwest is indicated by confirmation by company of negotiations for a plant site in the vicinity of Port Arthur, Texas. Deal for land and contracts for raw material have not been consummated at this writing.

Strict control of fertilizers is urged in a bill now under study by the Committee on Agriculture in the U.S. House of Representatives. Similar in intent to legislation governing drugs and economic poisons, the bill would require registration and regulate the manufacture, labeling and inspection of all fertilizer materials moving in interstate commerce. More on this next week.

Nationwide program for abatement of water pollution, pushed for the past two years by the U.S. Public Health Service, is out "for the duration." Officials say that priority in developing remedial measures is now being given to areas that may become critical as a result of defense activities.

USPHS reports may be used in deciding not only where new or expanded industry should be placed, but also the character and extent of waste treatment that will be needed at those locations.

Less rubber than was anticipated rolled out of the Government's World War II-built synthetic rubber plants last month. Reactivation has been slowed by bad weather and mechanical difficulties. As a result production was closer to 43,000 tons than the scheduled 52,400 tons. Next few weeks, however, should close the gap.

Expanded styrene capacity is reportedly planned by Monsanto at its Texas City plant. This will take some of the pressure off styrene supplies that has been generated by growing peacetime demand as well as the rubber program.

Specialties in the news: Chemical companies are casting a quizzical eye on detergent compounders, worriedly wondering whether they, following Procter & Gamble's lead, will start manufacturing their own raw materials. P & G has been making its own sodium carboxymethyl cellulose (builder for Tide, etc.) for some time . . . Sage Laboratories is adding an aerosol deodorant to its sales line; it has already been marketing a wick-type air freshener.

Look for more chemical production at Sarnia (Canada): Polymer Corp. is spending $6-$7 million on styrene and rubber plant expansion; Dow Chemical is reportedly spending several million; Godfrey Cabot will invest $1 million in carbon black facilities to supply the rubber industry booming there.

General Tire Co. plans a $5 million plant; other process industry expansions include an $18 million refinery (Canadian Oil Co.), a $15-$20 million pipeline (Sun Oil), and a further-off investment of several million by Imperial Oil. A large paper company will spend $6-$7 million and bring in pulp slurry by pipeline from Port Huron, Mich.

Investment in chemical securities by pension funds and other trusts seeking "blue chips" is a trend—starting only a few months ago—that augurs well for future industry expansion. More pension plans mean more capital for continuing growth.

A new master order—M-32—has been issued by NPA to govern chemicals. It provides rules for placing, accepting and scheduling DO-rated orders for materials which may be added from time to time to Schedule "A" (scarce chemicals).

Ethyl cellulose was the first commodity for which rules were laid down. Producers will not be required to devote more than 40% of any month's scheduled production to filling rated orders, and will not be required to accept rated orders less than 15 days before the first of the month in which delivery is requested.

DDT has also been added to Schedule "A." Producers of DDT will not be required to accept DO orders for more than 25% of their output.

Tributyl phosphite is used as an oil additive, and V-C expects all of the compounds to find utility in synthesis of insecticides, plasticizers, etc.

Virginia-Carolina Chemical Corp. will soon introduce a series of organic phosphites—three dialkyl phosphites (ethyl, butyl and 2-ethylhexyl) and three trialkyl phosphites (same alkyl substituents). The ethyl and butyl compounds have been made before, but the 2-ethylhexyl derivatives are brand-new.

World's largest ethylene unit will go up at Port Arthur, Texas, within the next year. Gulf Oil Corp. will break ground within two months and completion will take about a year. The unit will separate and crack gases from Gulf's refinery, and pipelines will carry the 2½ billion cu. ft. annual production (12% of current total output) to Gulf coast chemical plants.

Building contract for the multi-million dollar unit has been let to the Lummus Co. Construction will include all auxiliaries to make unit self-contained: power plant, water cooling system, tanks, sewers, pipelines, etc.

Metallic ricinoleates are now in the pilot plant at Baker Castor Oil Co., and volume production is expected soon. Barium, cadmium, calcium, magnesium and zinc salts are available, and samples are being distributed.

Count on hearing more about a new hydrocarbon reforming catalyst developed by Atlantic Refining Co. Advantage: high conversion to aromatics.

Four new cleaning compounds of a unique type are now in the market development stage at Pennsylvania Salt Mfg. Co. Neither soaps nor emulsifying agents, their detergent action depends on "solubilization" of insoluble materials. Especially suitable for heavy-duty jobs, they are being used to remove buffing compound from flat silver, printing ink and tar from workmen's hands.

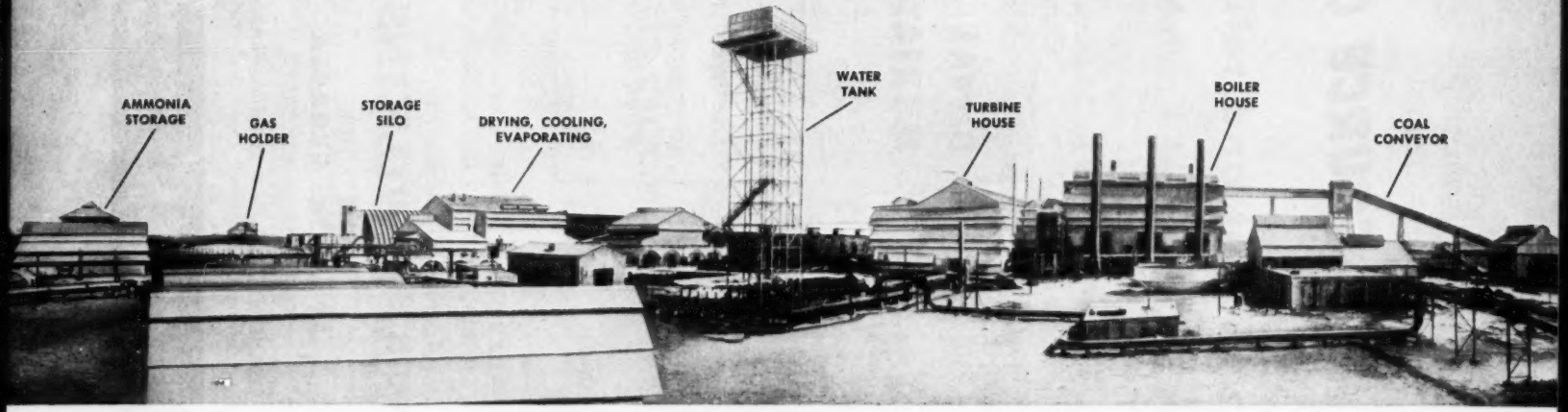
General Aniline & Film Corp. is now carrying out acetylene reactions at 3,000 psi (until now 250 psi was considered "high pressure" in acetylene work). Significance: lower equipment cost, probability of new syntheses.

More on specialties: Portland Shingle Co. (Ore.), whose Borgana compound was introduced a couple of years ago for boiler treatment, is now eyeing the auto radiator cleaning field. . . . Purex Corp. (Southgate, Calif.) is introducing Trend, its light detergent, into Chicago. Retail price will be 35¢ for 11 oz., but introduction is on a one-cent-sale basis. . . . Lever Bros. is about to launch Surf detergent in tidewater Virginia with a heavy advertising campaign.

. . . The Editors

Fertilizer for India

ANOTHER IMPORTANT CHEMICO PROJECT WELL UNDER WAY



Helping modern India to meet its vast requirements for fertilizer is another one of Chemico's world-wide activities. This large ammonium sulfate plant, located at Sindri, in Bihar province, will soon be in partial operation. The project, when completed, will produce 350,000 long tons of nitrogenous fertilizer per year . . . with a daily capacity of 1000 tons. • The plant will utilize such raw materials as coal, coke and gypsum which are wholly indigenous to India. It will include a completely independent power and water supply of record proportions. • The Sindri works was designed and is being supervised by Chemical Construction Corporation, New York and is being erected by Power-Gas Corporation Ltd., England, for the Ministry of Industry and Supply, Government of India.

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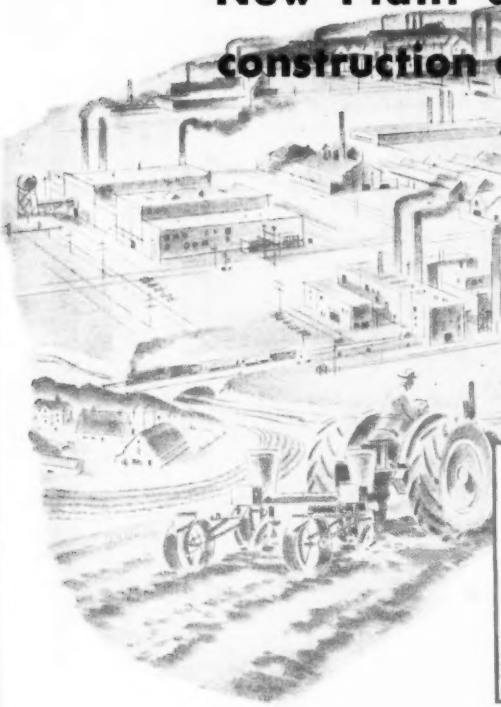

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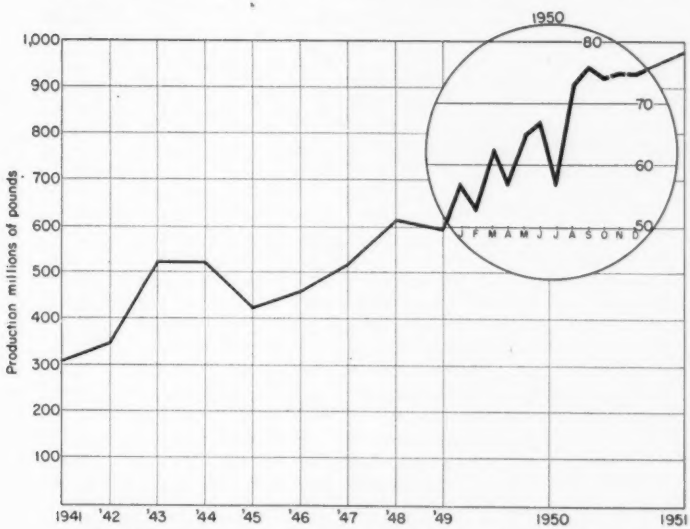


FORMALIN OUTPUT: Choice is between higher production and controls.

Formaldehyde Pickle

Production of synthetic resins of all types has pushed skyward, carrying formaldehyde requirements up with it. And further large increases are in store.

Major problem at present is lack of methanol to allow capacity operation of formaldehyde-from-methanol plants.

Raw material supplies promise even more trouble for resins in the future. There is not enough benzene and chlorine for phenol, inadequate plant capacity for conversion of ammonia and carbon dioxide to urea, and too few facilities for making pentaerythritol from formaldehyde and acetaldehyde.

Today one of the greatest problems facing the chemical industry is provision of adequate supplies of formaldehyde for a rapidly expanding market. CIW estimates that a 15-20% increase in formaldehyde capacity will be required by the end of the summer if drastic regulation is to be avoided.

Many formaldehyde uses are essential for defense, and thus the problem of regulation is difficult.

Also, methanol, formaldehyde's major precursor, is used in large amounts for automobile anti-freeze; but anti-freeze users have nothing else to turn to that is not in equally short supply. Tremendous quantities of ethyl alcohol are needed for conversion to butadiene for synthetic rubber. An estimated 80% of all ethylene glycol production is already slated for anti-freeze. And, further to complicate a complex interrelationship, about 15% of ethylene glycol output is based on formaldehyde as a raw material.

War baby: Formaldehyde is a war baby in several ways. During war periods, when metals find their way into shot and shell, a first step is to substitute plastics for metals wherever possible.

But the supply of plastics is also limited, and eventually plastics are drafted to do war jobs for which their properties make them particularly fitted. Thus, after the war machine starts to roll, substitutes must be found for the substitutes as more formaldehyde moves into military plastics and such explosives as RDX, pentaerythritol tetranitrate, and nitrated hexamethylene tetramine. Moreover, pentaerythritol (from formaldehyde) substitutes in alkyds for glycerine when the latter is channeled into explosives.

Sources: Up to the limit of methanol oxidation capacity, formaldehyde availability is tied almost directly to methanol supplies. Nearly 80% of formaldehyde capacity is based on direct oxidation of methanol.

The rest comes from Cities Service and Celanese, whose plants utilize direct oxidation of hydrocarbons to produce a mixture of oxygenated materials including both methanol and formaldehyde. It is rather difficult to assign a capacity to these units, for the product ratio can be varied by adjustment of process conditions. It is quite possible that, under pressure, the capacity shown in the accompying table could be increased appreciably, but only at the expense of some other product.

One other plant, the McCarthy plant at Winnie, Texas, was built to produce methanol and formaldehyde by the direct oxidation of hydrocarbons. It has operated for a time but is now in a standby condition, requiring considerable revamping before capacity operation could be reached. Even so, there is a question whether gas supplies are adequate for operation (*CI, Dec. 1950, p. 873*).

Two other standby plants—government-owned units at Danville, Pa., and Morgantown, W. Va.—could be operated if enough methanol were

available.* But some time would doubtless be required to shape them up for operation.

Another complication: Supplies of methanol to operate the formalin plants are not only a function of the methanol-producing capacity. They are also governed by the demand for synthetic ammonia, for a large number of synthetic methanol units can be switched very readily to ammonia production. Since ammonia is the basis of all explosives, as well as being an important fertilizer material, operators of such convertible units are sitting uncomfortably on the horns of a dilemma. Defense production urgently needs both products.

As yet the government has not had to build any additional synthetic ammonia units. But new plants—with total capacity over 100 million pounds per year—are now under construction by private industry. Still more, now on the drafting boards, are scheduled for an early start.

Where it goes: Increasing consumption of formaldehyde is not confined to any single category; nearly all uses have increased. However, the rapid growth of urea-formaldehyde resin looks like the largest single factor. Formaldehyde consumption in urea resins was up over 30% last year from the previous year. CIW estimates that formaldehyde consumption for this purpose will increase another 20% in 1951, to a total of about 250 million pounds of formalin. Substitution of urea resin adhesives for now short polyvinyl alcohol-based materials and the development of Plaswood, the first successful resin-bonded wood chip board (*CIW, Feb. 3, 1950, p. 8*), are two major contributors to upped demand.

Production of melamine-formaldehyde resins should equal or top the 1950 peak. It is estimated that melamine resin output this year will be 60 million pounds, requiring about 50 million pounds of formalin.

Last year's needs for phenolic resins again approached the high set in the peak quarter of 1948. If sufficient benzene can be found to enable capacity operation of Bakelite's new plant at Marietta, Ohio, it is estimated that nearly 440 million pounds of formalin will be consumed this year in phenolic resins.

Fast-growing demand for pentaerythritol will require somewhat over 200 million pounds of formalin in

* Enough methanol could be made available by operating the methanol facilities at Morgantown. The Army Ordnance Department is rehabilitating the plant but says that, despite the fact that it has money for the job, it is too early for details on how much capacity will be restored. Presumably these units will produce solely for the Ordnance Department.

UNITED STATES PRODUCTION FACILITIES

Company	Location	Estimated Production Capacity (Millions of pounds) Formalin (37% Formaldehyde)	Methanol	Ammonia
Bakelite Div., Union Carbide & Carbon Corp.	Bound Brook, N.J.	130	...	...
Carbide & Carbon Chem. Div., Union Carbide & Carbon Corp.	Niagara Falls, N.Y.*	...	(13)	...
" " " "	S. Charleston, W.Va.	...	80	...
" " " "	Texas City, Texas	...	120	...
Casein Co. of America Div. Borden Co.	Bainbridge, N.Y.	12	...	...
" " " "	Springfield, Ore.	25	...	...
Celanese Corp.†	Bishop, Texas	175	60	...
Cities Service Oil Co.	Tallant, Okla.	20	25	...
Commercial Solvents Corp.	Agnew, Calif.	5	...	...
" " "	Sterlington, La.	...	160	120
Dow Chemical Co.	Freeport, Texas	...	...	70
" " "	Midland, Mich.	...	...	30
" " "	Pittsburg, Cal.	...	...	10
Durez Plastics & Chem. Co.	N. Tonawanda, N.Y.	30	...	...
E. I. du Pont de Nemours & Co.	Belle, W. Va.	140	(80)**	400
" " " "	Niagara Falls, N.Y.	...	...	18
" " " "	Orange, Texas	...	265	...
" " " "	Perth Amboy, N.J.	175	...	...
" " " "	Toledo, Ohio	40	...	...
Hercules Powder Co.	Pinole, Calif.	...	...	55
Heyden Chemical Co.	Forde, N.J.	20	...	...
" " "	Garfield, N.J.	175	...	...
Kay-Fries Chemicals, Inc.	W. Haverstraw, N.J.	15	...	...
Lion Oil Co.	El Dorado, Ark.	...	...	415
Mathieson Chemical Corp.	Lake Charles, La.	...	...	175
" " "	Niagara Falls, N.Y.	...	...	15
McCarthy Chemical Co.	Winne, Texas*	(30)	(33)	...
Monsanto Chemical Co.	Indian Orchard, Mass.	70	...	...
Pennsylvania Salt Mfg. Co	Wyandotte, Mich.	...	...	25
Phillips Chemical Co.	Etter, Texas	...	...	260
Reichhold Chemicals, Inc.†	Tuscaloosa, Ala.	6	...	...
Rohm & Haas Co.	Philadelphia, Pa.	25	...	...
San Jacinto Chemical Corp.	Houston, Texas	...	...	45
Shell Chemical Co.	Shell Point, Calif.	...	...	200
Solvay Process Div. Allied Chem. & Dye Corp.	Hopewell, Va.	...	...	580
" " " "	South Point, O.	40	120	360
Spencer Chemical Co.	Calumet City, Ill.	35	...	...
" " "	Henderson, Ky.	...	...	140
" " "	Pittsburg, Kans.	...	55	340
Tennessee Valley Authority	Muscle Shoals, Ala.	...	...	190
U.S. Government Cherokee Ordnance Works	Danville, Pa.*	(45)	...	...
U.S. Government Morgantown Ordnance Works	Morgantown, W.Va.*	(50)	(160)	(350)
Watson-Park Chemical Co.	Baltimore, Md.	7	...	...
Total (Operating)		1145	885	3408
Total (Available)		1270	1091	3763
UNDER CONSTRUCTION				
Hooker Electrochemical Co	Tacoma, Wash.	...	...	20
Mississippi Chemical Co.	Yazoo City, Miss.	...	...	85

* Plant not operating

† Both formaldehyde and methanol produced by hydrocarbon oxidation. Others produce methanol from carbon monoxide and hydrogen and formaldehyde by methanol oxidation.

**Belle does not normally produce methanol. However, shortages of natural gas at Orange, Texas, have cause a temporary resumption (CI, Dec, 1950, p. 873). Not added to any totals.

1951—up from 135 million pounds in 1950. Ethylene glycol and hexamethylene tetramine production will require 100 and 70 million pounds respectively, of formalin, about the same as was used last year.

Thus the 1951 demand for formalin shapes up like this:

Use	(*millions of lbs.*)
Urea-formaldehyde resins	250
Melamine-formaldehyde resins	50
Phenol-formaldehyde resins	440
Pentaerythritol	200
Ethylene glycol	100
Hexamine	70
Paraformaldehyde	20
Miscellaneous	20
Total	1150

The breakdown represents what will probably be produced. It does not attempt to foresee demands which cannot be met for lack of raw material. New developments in the rearmament program will undoubtedly exert pressure for additional production.

Menhaden's Fame

Now accounting for over half of domestically produced fish oil and meal, the menhaden—subject of a forthcoming full-length motion picture produced by the U. S. Fish and Wildlife Service in cooperation with industry—is increasing in importance. Process uses of the oil include paints, varnishes, insect sprays, printing inks, linoleum, soaps, and lubricants. The vitamin-rich meal is used for feed enrichment.

There are now 31 rendering plants in the menhaden industry, mostly scattered along the Atlantic Coast. In the past decade the industry has also expanded to the Gulf Coast. North Carolina has the largest number of plants (nine), Virginia is second with six, Florida and New Jersey have three each, Delaware has two and South Carolina and New York each have one.

On the Gulf Coast there are two each in Mississippi, Louisiana and Texas. One of the largest operators is Quinn Menhaden Fisheries, Inc., which has plants in six states: North Carolina, South Carolina, Florida, Texas, Louisiana and Mississippi.

Menhaden on top: The two principal fish utilized by rendering plants are menhaden and pilchards. The menhaden catch in 1949 was 1,064 million pounds, while that of pilchards was 640 million.

While the catch of pilchards has been fluctuating over recent years, the menhaden catch has been steadily increasing. In the first half of 1950 the oil derived from menhaden amounted to 8,293,911 gallons, or more than half of the 16,580,902 gallons of fish oil obtained from all sources. Of the 205,476 tons of fish meal derived from all fish in the first half of 1950, menhaden contributed 107,596 tons.

SEINING MENHADEN: Star of a movie, basis of a $20-million industry.

Notwithstanding the large production of fish oil and meal in this country, there are large imports of meal, which amounted to nearly $7 million in 1949, mostly from Canada and Newfoundland, though 21 countries contributed to the total, including Peru, Portugal and South Africa.

Before World War II the meal was largely used as a fertilizer, but the shortage of livestock feed during the war resulted in its experimental use in the feeding of cattle, hogs and poultry, which was so successful that practically all the meal now goes for these purposes. Some of the oil is also used for vitamin feeding oils for poultry. An analysis of the meal made recently by the Laboratory of Vitamin Technology, Chicago, for the Nassau Fertilizer & Oil Co., of Fernandina, Fla., showed 2510 units per pound of vitamin A, 2.42 milligrams per pound of riboflavin and 4.1 milligrams per pound of vitamin C.

Lots of oil: Menhaden are a very bony and oily fish, a little larger than sardines, usually ranging from four to six inches long. They travel in enormous schools and are the most prolific fish in the Atlantic Ocean.

Planes spot them: In spring the schools travel about one mile off shore, but in the fall they are found 10 to 15 miles out. They are detected by their shape and color and by the way they play in the water, but of late some companies have been using airplanes for speedier detection. When these planes locate a school they communicate by radio with the fishing boats.

They are caught from small craft, usually about 33 feet long, known in the trade as purse boats. When schools are located, two of these boats put out with a purse seine, which is hauled in when filled. The purse boats are carried on a mother ship ranging in length from about 80 to 135 feet. The fish, after being seined, are pumped or bailed aboard the mother ship, which will carry from 400,000 to 1,000,000 pounds when fully loaded. Usually a mother ship will load to capacity in one day, but stays out longer if necessary to obtain a full load.

No storage: The fish cannot be stored but must be processed as soon as they are landed at the rendering plants. After passing through a measurement tank, they are placed in a cooker and thereafter are pressed into cakes of meal, leaving a residue of oil and water. The water is separated from the oil by a settling process and then run through evaporators. From the water a residue of about 5 per cent fish solubles is obtained, which is used for chicken feed. The oil is then cooked and stored until it is shipped out for refining. An unpleasant odor is eliminated in the refining process. The fish cake still retains about 50 per cent moisture after pressing. This is reduced to about 10 per cent in dryers and is further cured in warehouses. It is then ground and sacked and sold as fish meal and fish scrap.

The value of the products of menhaden has been upward of $20 million annually in the past several years.

CO-OP CHEMICALS: Leaders will fight for worsening supplies.

Co-ops Set High Sales Goal

Big farm co-ops, which have been riding high on pre-mobilization sales of fertilizers and chemicals, won't let shortages bring the ride to an end.

Even while they talk about scarcities and hunt for new supply sources, they are making plans to step up their sales efforts. One group has bought phosphate deposits, will continue exploring for potash on government land.

Traditional farm co-op conservatism has caused agricultural chemical sales to lag behind fertilizer sales, but calls for more aggressive policies are coming from within their own ranks.

Sales of fertilizer and chemicals by farm co-ops have doubled since 1945. The dollar volume of 18 big regionals, which can be taken as a rough indication of the trend in co-op sales, jumped from $30.7 million in 1945 to $64.8 million in 1949 for fertilizer and insecticides alone. They will probably show another big increase for 1950 when the figures are in.

Supply, of course, is the key to what they'll do in 1951. They have noted the big 1951 cotton goals of the U. S. Department of Agriculture, the increased acreage of winter wheat, and the talk about a sharp gain in corn acreage. They take all this to mean that food goals across the board are likely to be big.

In this case, they believe fertilizer and chemicals will flow to agriculture in like proportion. If not, they'll go to Washington to make a fight for it. Co-op leaders are rolling up their sleeves for such a battle, if one is required, as members of the National Committee for Farm Production Supplies. This committee operated during World War II. It was reactivated at a meeting of the National Council of Farmer Cooperatives in Chicago last month.

In today's tightening supply situation, the co-ops must continue to look largely to their present suppliers, with one notable exception: the 15 Midwestern co-ops which formed the Central Farmers Fertilizer Co. and bought several million tons of rock phosphate deposit near Montpelier, Idaho. The deposits were bought in 1947 to assure a supply if needed. Central Farmers has also done some exploring for potash on government lands, and will do more. If the pinch gets severe enough, these Midwestern co-ops may get the production of some of their raw materials needs. In the meantime, they rely, as other co-ops do, on such stand-bys as American Cyanamid, International Minerals and Chemical, Swift, Coronet Phosphate, Potash Co. of America, Bonneville, Ltd., U. S. Potash, American Potash, etc.

In chemicals – principally insecticides–it's the same general story. Big wholesaler co-ops like United Co-operatives of Alliance, Ohio, formulate and package products for sale to retailer co-ops. Some state organizations, such as the Indiana Farm Bureau Co-operative Association, also do formulating. Others, like Missouri Farmers Association, buy the formulated product from the manufacturer–Du Pont in this instance. At one phase or another in the process of putting chemicals in farmer's hands, the co-ops deal with most of the familiar names in the industry–Du Pont, Dow, General Chemical, Victor, Monsanto and many others.

The sale of chemicals by co-ops doesn't show the big increase that fertilizers have shown. The $7,674-000 volume of the 18 big regionals in 1949 was an increase of only one half of one per cent over the year before. Fertilizer sales by the 18 regionals jumped 22% in the same period.

One reason for this slower pace of co-op chemical sales is the traditionally conservative policies followed by many of the farmer-controlled organizations. Illinois Agricultural Association, for example, regards chemical defoliants for soybeans to be a case of "research results not in". They're waiting for results from studies of possible damage to the beans and to the soil. In the meantime, Monsanto has field-tested defoliants and the results as reported in farm papers, have aroused farmers' interest.

The attitude of the Illinois Agricultural Association in this instance is fairly typical of co-ops. Because they are farmer-controlled, their managers feel they must be slow to adopt new products or to advocate new methods for fear of long-run unfavorable results. They point to the confusion which surrounded the use of DDT a few years ago.

But there is more variation among the co-ops in this respect than is sometimes realized: The Indiana Farm Bureau Co-operative Association, for instance, has been formulating and selling a defoliant for several years, feeling that experiments conducted at Purdue University justified their use.

Part of this variation in accepting

new products can be traced to the fact that co-ops depend almost entirely on the land-grant colleges—the state agricultural colleges—for research. The colleges differ widely in their capacity to take on new projects and in the speed with which they will test and report on a new product.

The policies of co-ops regarding fertilizer, while still conservative in many instances, is generally more aggressive. Some co-op fertilizer men, like Dan Williams of the Minnesota Farm Bureau Service Co., have pushed hard for high analysis mixes. Williams' mixes average 40 units of plant food to the ton, compared to a U. S. average of about 22. Southern States Cooperative, Inc., has experimented for 5 years with a plant at Culpepper, Va., which mixes granulated materials to whatever formula the farmer customer brings in, then applies the product to the farmer's land as part of the service. A Des Moines co-op, Iowa Plant Foods, Inc., has a new plant which has attracted the attention of the industry for its advanced methods.

Despite occasional instances of experimentation, the co-ops know that they are often accused of letting others bear the cost and risk of new developments. At their Chicago convention, they heard one of their own top research men, Dr. George Scarseth, call for more daring.

Dr. Scarseth, director of research for the American Farm Research Association, said co-ops have "been whipping the lazy horse too much; it's the lead horse that needs to be encouraged." His lazy horse is the farmer who is satisfied with tried and proved average fertilizer recommendations. He wants fertilizer manufacturers to put out products labeled "risk recommendations", for the farmer who wants to produce more than the average. He urged the co-ops to offer their "more adventuresome farmers something to bite into."

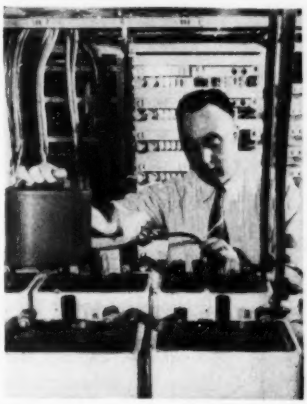
What he said fitted into what was expressed often at the convention—a determination to carve out a still bigger place for co-ops, depite the concern over short supplies.

No Antimony

This week three electric storage battery manufacturers, C & D Battery Co., Electric Storage Battery Co., and Gould-National Battery Co., began to turn out large quantities of a totally new type of storage battery. Lead plates were being used, but with a difference.

For years it has been common practice to stiffen the lead plates of the standard lead-plate electric storage battery by the addition of about 12% antimony. But in the new batteries, developed by Bell Telephone Laboratories, the antimony has been replaced by about 0.1% calcium. Savings of over a million dollars per year are expected from this change.

Via stibine: The search for a minute trace of a gas which was tarnishing equipment in telephone offices opened the door to development of the new battery. The searchers finally came to the battery room where, during the battery overcharge period, a foreign material was detected in the air. After freezing it out in a liquid air trap, the material was found to be antimony hydride, stibine. Although this gas was not the corrosive agent that spurred the search, it neverthless led to the discovery of some high jinks within the battery.



LEAD-CALCIUM BATTERIES: No antimony saves a million dollars per year.

It was found that the antimony, used to harden the plates, was passing as stibine from one plate to another. This sped up undesired battery corrosion and caused a partial discharge of the negative plate.

Cable research: Some time before, Bell metallurgists, in their search for new and better hardening agents for lead cable coverings, had discovered that 0.1% calcium could replace the then-used antimony. And it could do the job in batteries too. From here it was only a short, but time-consuming, step to the new battery. The time was required to prove suitability and endurance of the new battery under operating conditions.

Floating only: The new battery is suitable for floating operation only. Here a battery is always in a standby condition, ready to supply power at a moment's notice. But it may stand for years without being discharged, a tiny trickle of charging current maintaining it in a fully charged condition. The telephone company is by far the largest user of batteries for this type of service, but within six months C & D expects to put out another cell for switchgear service with plates different from those used by the telephone batteries.

The calcium cell is not considered suitable for such cycling services as are encountered in electric truck operation. In cycling service the battery is rapidly discharged and then immediately recharged. Thus the life of the battery is greatly reduced. In fact, battery life in this type of service is so short that the antimony problem does not arise.

Initial cost: Although it is too early to discuss cost of the batteries, except for the size used by the telephone companies, it is expected that they will be competitive with the standard antimony-lead battery.

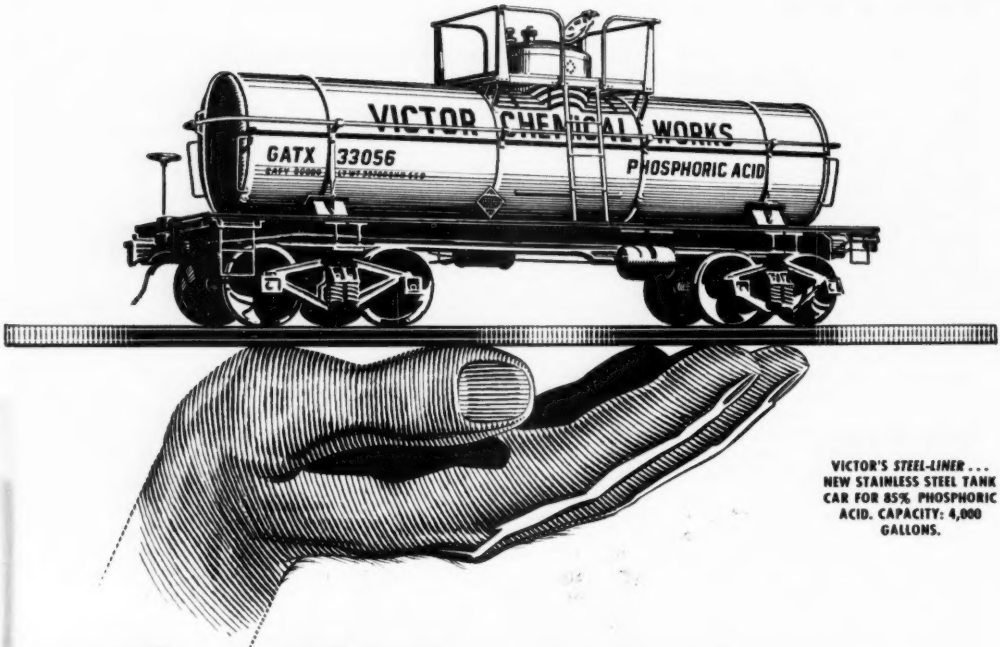
At Low Pressure

Need for complicated, hard-to-fabricate equipment has been one of the greatest drawbacks to the possible use of coal hydrogenation for production of aromatic chemicals and liquid fuels. However, a new Bureau of Mines' low pressure hydrogenation technique promises relief from these restrictions.

Based on pilot-plant investigations at the Bureau's Synthetic Fuels Research Branch at Bruceton, Pa., this first step of the new method is carried on at only 1500 psi instead of the usual 4000 to 10,000 psi. A plant using the new process can be fabricated from standard equipment—a great advantage if a national emergency should require such plants.

By impregnation: Conversion of coal to heavy oil at low pressures in itself is not new. However, previous processes were carried out at relatively low temperatures to avoid coking difficulties. Thus the contact times were extremely long. The "gimmick" in the new process is enhancement of the catalyst activity to decrease contact time. This is done by impregnating the surface of the coal particles to be hydrogenated with a water solution of the catalyst, such as ammonium molybdate, nickelous chloride, stannous chloride, or ferrous sulfate.

Most of the used catalyst is concentrated in the residue, from which it can be recovered.



VICTOR'S *STEEL-LINER* . . . NEW STAINLESS STEEL TANK CAR FOR 85% PHOSPHORIC ACID. CAPACITY: 4,000 GALLONS.

with emphasis on service . . .

PHOSPHORIC ACID USES:

Manufacture of:
yeast, sugar, soft drinks, imitation jellies, gelatin, pharmaceuticals

Rustproofing, engraving, railroad car cleaning, refining oil and gasoline, preserving silage

Weighting silk, dyeing textiles

Chemical polishing and electro-polishing metals, bright-dip baths for aluminum

Manufacture of phosphates, dental cements, glue, ceramics, glass, metal treating compounds, explosives, fertilizers

Containers for Victor Phosphoric Acid:

TANK CARS, 

55 GAL. STAINLESS STEEL DRUMS, 

13 GAL. GLASS CARBOYS. 

New uses for phosphoric acid are continuously being developed. Some of these new applications require tank car quantities of this important, versatile material.

To provide carload service for 85% acid customers, Victor has introduced a new stainless steel tank car which is specially equipped with steam heating coils. Shipping 85% phosphoric acid in the usual rubber lined tank cars is not advisable. Users of tank car quantities of Victor 85% phosphoric acid find it easier and more convenient to unload the material from the Steel-Liner.

The Steel-Liner is another example of the importance Victor places on SERVICE. As always, Victor's technical and research scientists are searching for ways to improve and develop chemicals and services to industry. If you have a product problem, contact Victor! Your inquiry should prove profitable to you!

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Primary Beryl

Beryl, major source of beryllium and its compounds, has always been recovered incidentally in mining other minerals.

Now—since beryl is a minor but vital raw material for defense and industry—the Bureau of Mines is pushing research on primary mining of beryl in the Black Hills of North Dakota.

Beryl (beryllium aluminum silicate) is chiefly found in a granite formation known as pegmatite containing feldspar and quartz and often mica, tantalum, columbium, and lithium minerals. The Black Hills is the nation's principal source of beryl.

Beryllium, the metal, is used in X-ray tube windows, finds numerous applications in the atomic energy field as a moderator and reflector of neutrons, similar to graphite and heavy water, and is widely used commercially as an alloying agent with copper.

Bureau of Mines mining engineers are driving an opening into a pegmatite deposit at the Peerless mine in Pennington, S. D. They will obtain bulk samples of beryl for shipment to Bureau laboratories at Rapid City, S. D., where ore-dressing or metallurgical tests will be developed to recover the beryl.

No effective commercial method of recovering small beryl crystals exists today, Mr. Zinner, regional Bureau director, points out. Domestic mining of beryl has always been incidental to the recovery of other minerals within the pegmatite. Beryl is hand-sorted from the pegmatite along with feldspar, mica and lithium minerals. Consequently, small pieces of beryl are lost in the sorting.

While principally concerned with beryl, the long-range objective of the Bureau's metallurgical program is the recovery of all minerals within the pegmatite. Should a method be developed, waste would be at a minimum. Virtually every constituent could find a satisfactory market if produced in sufficient volume and purity.

S. M. Runke, Bureau metallurgist in charge ot Rapid City, will use a flotation concentration process and other methods to recover beryl.

At the Peerless mine, Bureau mining engineers will determine the cheapest and most efficient ways to mine pegmatite rock rich in beryl.

Beryl has numerous industrial uses. It is employed directly in the production of high-grade dielectrics for use in airplane sparkplugs. Beryllium-copper alloy is outstanding because of its fatigue, corrosion, and wear resistance, hardness, tensile strength, high electrical and thermal conductivity, and nonmagnetic and nonsparking properties.

Beryllium oxide has many applications in the refractories field and has been used in phosphor compounds in television screens. Beryllium nitrate acts as a strengthener in gas mantles, and various compounds have value as catalytic agents.

Brassless Bond

A British process for bonding rubber to metal eliminates the bothersome brass plating step. The new method should encourage greater use of the metal-rubber combination as an engineering material.

The new approach to the problem of joining rubber to metal is really a modern twist on an old idea for improving rubber's adhesive properties. The rubber surface is treated with concentrated sulfuric acid, which cyclizes and hardens the polymer. After washing and drying, the surface is painted with a thin coat of liquid resin, called Redux by Aero Research (Cambridge, Eng.), sponsor of the process. Chemically treated metal gets a comparable coat of resin. Both coated surfaces are then dipped in Redux powder and pressed face-to face under 50 psi at 145 C. Pressure may be applied by clamps, and an oven is usually used for heating.

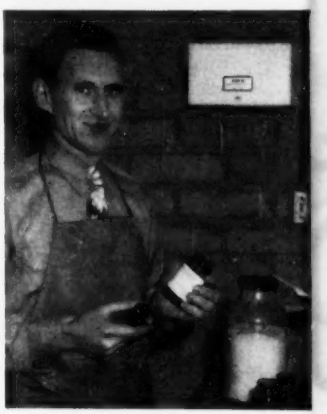
Primarily for hard rubber, process variations have been devised to prevent distortion, making the method applicable to soft rubbers as well.

Cuts expense: Selling point of the Redux process is its simplicity and economy compared to the conventional brass-plating procedure. By the latter method, metals must be given a brass surface prior to bonding in expensive dies and presses. The rubber is really vulcanized in contact with the metal. Adhesives have been developed which do away with brass plating, but they too require expensive equipment to vulcanize rubber in contact with a metal.

The new process is a practical, low-cost scheme for bonding already vulcanized rubber to metals. By eliminating hydraulic presses, dies, and electroplating with its waste disposal headaches, Redux brings the bonding operation within reach of small processors lacking the expensive specialized equipment previously needed.

Three-Man Firm

A small but growing producer of organic analytical reagents, Versatile Chemicals, Inc., Glendale, Calif., got its start in a University of Southern California laboratory, where two of the three corporation members finished their graduate work in 1948. Incorporated last June, Versatile has placed on the market 2,4-dinitrobenzenesulfenyl chloride, an analytical reagent.



FRANK W. CRANZ: Marketing college knowledge.

Versatile is also marketing four other compounds with somewhat limited laboratory use. These are 2,4-dinitrophenyl disulfide, 2-nitrophenyl disulfide, 2-nitrobenzenesulfenyl chloride and 2-nitrobenzenesulfenyl bromide.

Versatile's president is Frank W. Cranz. Two other corporation members, currently carrying on research for industries outside the company, remain unnamed. Professor Norman Kharasch, University of Southern California is consultant for the company.

Interestingly, it was under Dr. Kharasch that the two graduate research members of the corporation did much of the fundamental work on the reagents.

Thus far, besides various top-rate college research labs, Versatile has found a market among research laboratories in the rubber and petroleum industries.

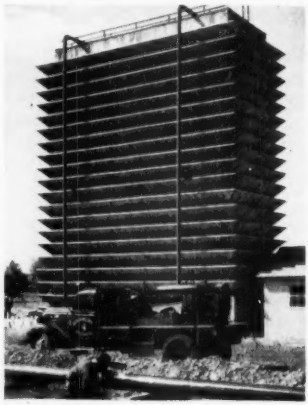
Cranz, who admits his company is weeding out some analytical products "which haven't found a wide enough market to warrant their continuation," points to the firm's original list of 14 chemicals, now pared down to 5.

Versatile is something of a maverick among chemical corporations because its members did their preliminary development in the college laboratory —and then preceded to form a corporation to market their findings.

Slime Stopper

Oronite Chemical Co.'s affiliate, California Research Corp., has developed a new reagent for the control of biological fouling (CIW, Jan. 20, 1951, p. 11). This new product, Oronite Algicide ATM-50, is now being test-marketed for the control of algae in industrial recirculating cooling water systems.

The growth of algae in cooling water systems has long been a serious problem, especially in the West and South where warm weather increases the rate of algae growth. Heavy infestations of algae and allied slime-forming organisms can seriously decrease the efficiency of condensers and evaporative cooling towers and may ultimately lead to excessive maintenance of the latter. Although several reagents are currently available for algae control, the Oronite product offers advantages in its lack of toxicity and dermal irritation, its ease of handling, its efficiency at low dosage levels and its ready miscibility with water.



COOLING TOWER: Quaternary keeps it clear.

Oronite Algicide ATM-50 is a high-molecular-weight quaternary ammonium compound combined with a synergist to give a product of high algicidal and algistatic potency. The material is a light yellow-colored liquid having a low viscosity and a density approximately the same as that of water. Since the product is ordinarily added to the cooling system once every other day, no continuous reagent feeder of any kind is required.

Already tested: The new algicide has been tested extensively at various installations in refineries of Oronite's parent company, Standard Oil Co. of California, where it has been proved successful for over a year. As a result of this successful experience within the Standard organization, Oronite has recently commenced trial marketing Algicide ATM-50 to oil refineries, chemical plants, power plants, and other similar installations where algae in recirculating cooling water systems present a problem. While the most effective treatment will, of course, depend upon plant conditions, the Oronite product is generally effective in controlling algae when used at the rate of only 2 ppm of the daily make-up water rate to the system. The results to date indicate that in many commercial installations Algicide ATM-50 offers economical and effective control of biological fouling.

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Rare earth exchanger: Isolation of pure rare-earth elements, formerly accomplished by tedious crystallization techniques, is now done by A. E. C.-developed ion exchange processes. Saving in time and labor is reported to be considerable.

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New intermediates: N,N-Dicyanoethyl benzenesulfonamide and N,N-dicarboxyethyl benzenesulfonamide are two Wyandotte chemicals, now in the pilot-plant. Two reactive groups present in each molecule indicate uses as intermediates in the preparation of plasticizers, pharmaceuticals, solvents, and resins. Commercial production awaits further product development.

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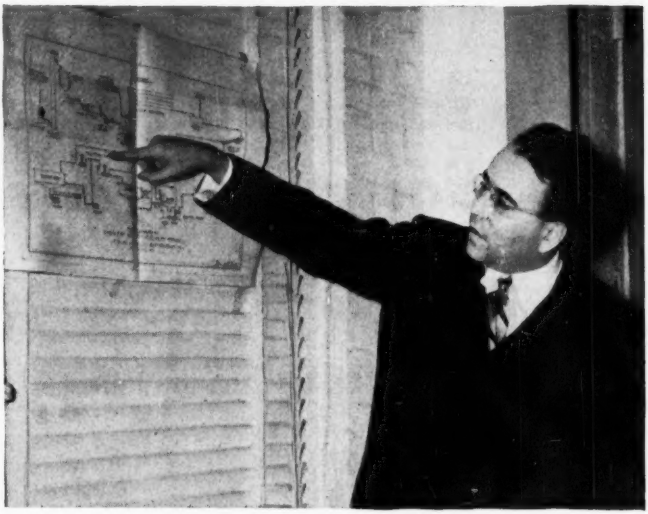
Pentachlorophenol is currently getting a call from the navy. A wood preservative, the chemical is applied to aircraft carrier-decks upon reactivation from the mothball fleet.



TOM FORBATH: With surface sulfur, alleviation of a crisis.

Surface Sulfur

Elemental sulfur can be recovered at present price levels from native surface deposits by a combination grinding, coalescing, flotation and filtration process.

First commercial plant is now under construction in Colombia, South America.

Chemical Construction Corp., which developed the process, estimates that a 200 ton-a-day plant in Wyoming would pay out in four years at an operating cost of $12 per ton. Estimate is based on ore containing 35% sulfur.

This month Tom Forbath, of Chemical Construction Corp., described for the first time Chemico's new process for recovery of sulfur from deposits not amenable to the Frasch process. Speaking before the Chemical Engineer's Club in Washington, Forbath said that the first commercial plant using this process is now under construction in Columbia.

Three years ago, a group of South American investors gave a sample of the sulfur-bearing ore to Allis-Chalmers Manufacturing Co. for evaluation. Allis-Chalmers in turn got Chemico interested in recovering the sulfur content. Chemico's research finally culminated in the process (USP 2,537,842) now being installed in Columbia.

The process: The mined ore, containing at least 20% elemental sulfur, is ground in three steps. A jaw crusher first reduces the ore to two inches, and a second crushing gives ¾" lumps. This product passes to a pebble mill lined with silica brick for wet grinding. The slurry emerging from the pebble mill passes to the gangue separator—heart of the recovery process.

Here the slurry is heated with live steam under pressure to melt the sulfur. Eddy currents in the vessel cause the sulfur globules to coalesce. The slurry is then quenched with cold water. After dropping through a let-down valve, the slurry passes through a 20-mesh vibrating screen which separates the oversize sulfur particles (92%-95% sulfur). The sulfur from the vibrating screen is melted while the rest of the slurry passes to the floatation cells for further sulfur recovery.

Flotation: The floated solids con-

tain 90% sulfur and are dewatered in a solid-bowl continuous centrifuge. Upon discharge from the centrifuge, these solids also pass to the sulfur melting pit. Free acidity is neutralized with lime and molten sulfur is filtered through 316 stainless steel filter cloth. The filtration product is 99.5%-99.9% sulfur.

All ores usable: All native sulfur-bearing ores are amenable to treatment by the process. All known major deposits in the United States, as well as ores from several locations in South America, Egypt, Greece, Turkey, Japan and India, have been sampled. In the largest deposits the gangue in the ores is silica. Some important deposits, however, contain calcium sulfate and calcium carbonate gangues.

Economics: Forbath estimates that a turnkey plant in the Western part of the United States to produce 200 tons a day of 99.5%-99.9% pure elemental sulfur would cost $1.4 million. Operating costs, including mining, direct labor, and materials for processing, would be about $12 per ton of sulfur recovered. At present tax rates the plant would pay out in four years.

Ore supplies: Supplies of this type of ore are found all over the world, including the United States. Most important deposits in the United States are believed to be in Northwest Wyoming.

Largest known deposits in the world, however, are in the Andes mountains in South America. It has been estimated that these, stretching for the full 3,000-mile length of the Andes contain over 100 million tons of elemental sulfur. Although much of it is inaccessible, this is enough sulfur to supply the world's demands for many years to come.

It is not too much to hope that, once the necessary plant can be installed, the present sulfur crisis will be alleviated.

New Dryer

Continuous conveyor drying systems have a new competitor in the Wyssmont Co.'s redesigned Turbo dryer. The new unit is designed for the drying of such heat-sensitive materials as plastics and waxes. First unit was installed for drying wax in Brazil.

In the standard, internally-heated Turbo design, there is a tendency for the heaters to become fouled when operating on heat-sensitive materials. This difficulty has been overcome by heating the air in an external steam heating unit and then passing it through the dryer. This air only passes through the dryer once. It is not reheated. This arrangement greatly reduces fouling and product contamination. Further, it makes for easier cleaning of the inside of the dryer.

Through the top: Material is fed through the top of the dryer. It is spread on a revolving shelf as it moves under the feed opening. Before a complete revolution has taken place, the material is swept off the tray to the shelf below. This process is repeated until the bottom of the dryer is reached.

The new units are available in aluminum, stainless steel, Transite, Chemstone and other corrosion-resistant materials. Evaporating capacities of from 20,000 to 30,000 pounds of water are available in single units. Temperature of material in the dryer is limited to 300°F.

Plant of Plastic

Something new in pilot plants: Unplasticized polyvinyl chloride has been used for the fabrication of a complete pilot plant for the absorption and oxidation of nitrogen oxides by Dynamit A.G. of Troisdorf, Germany. This is one of the largest pieces of equipment ever made from rigid PVC.

The entire washing plant, except for the backing rings and steels frame, is made of rigid PVC ("Trovidur") by welding processes. The backing rings are made of phenolic laminated material while pumps are of rigid PVC.

A ventilator causes a mixture of air and nitrous oxide fumes to pass through a cyclone into the first absorption tower. Coarse dust particles and condensates are separated in the cyclone.

In the three absorption towers the gas mixture passes upward against a fine water spray. The towers are filled with Raschig rings, also fabricated from rigid polyvinyl chloride. From the last absorption tower the gases pass through another cyclone to an injector where the remaining nitrous oxide fumes are thoroughly mixed with further air to achieve complete oxidation. The plant can treat 10 cubic meters of gas per day.

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Air filter: Corrugated strips of fine wire cloth have been fabricated to produce a series of closed-end pyramid-shaped pockets in the new high velocity air filter of American Air Filter Co. This forces all air, at stream velocities as high as 500 fpm, through the wire mesh.

(A Quick Quiz on modern pH advancements)

Do you know these important facts about BECKMAN pH CONTROL?

Do you know...

That Beckman pioneered modern glass electrode pH equipment?

Until Beckman pH instruments were developed, glass electrode pH equipment was a cumbersome, complicated laboratory curiosity. It was Beckman that pioneered today's simple, compact, highly accurate and completely dependable glass electrode pH equipment!

That Beckman pioneered virtually every major development in modern glass electrode pH equipment?

Such far-reaching advancements as glass electrodes that can be used at temperatures as high as 130° C, and show negligible deviation even in high temperature-high pH ranges ... glass electrodes that can be used at temperatures as low as −20° C and will withstand repeated freezing ... glass electrodes so strong they can even be used as stirring rods—so abrasion-resistant they readily withstand long service in abrasive slurries ... these and other vital glass electrode advancements were *all* pioneered by Beckman. *Many of these advancements are still available exclusively in Beckman equipment!*

That Beckman offers the industry's most complete line of glass electrode pH instruments?

Included in the complete Beckman line are instruments specially designed to combine the high precision and wide versatility necessary for advanced research, medical and laboratory applications . . . others that combine maximum simplicity and high accuracy with complete portability for plant and field applications . . . still others that combine maximum simplicity and high accuracy with the plug-in convenience of full AC operation . . . plus *completely automatic* pH equipment for continuous pH indication, recording and control on large-scale processing applications.

That Beckman also provides the industry's most complete line of modern glass electrodes?

Although glass electrode pH instruments are the most efficient pH equipment obtainable, no glass electrode pH instrument is better than the versatility, accuracy and dependability of the electrode assemblies available for use with it.

Beckman provides the industry's most complete line of glass electrodes for use with Beckman pH instruments—a type of electrode assembly to meet every industrial, research, laboratory and field requirement!

That there are so many money-saving applications for Beckman pH control that you may be losing important profits unless you make a complete investigation of your operations?

There is pH wherever there's water, water solutions, moist pastes, sludges, slurries or other moisture-containing substances. And wherever there is pH, chances are the operation can be done better . . . with greater uniformity and less waste at lower overall cost . . . by Beckman-controlling the pH of the various processing operations.

WHETHER *you manufacture food products or treat sewage ... do metal plating or refine crude oil ... make textiles or process ore—in fact, no matter* WHAT *your field of operation ... if you have not yet determined whether Beckman pH Control can be used to advantage in your operations—possibly is already* BEING *used to cut costs by your competitors—let us study your processes and make helpful recommendations. No obligation, of course.* BECKMAN INSTRUMENTS INC., SOUTH PASADENA 17, CALIFORNIA. Factory Service Branches: New York, Chicago, Los Angeles.

For an informative, non-technical outline of modern pH control—what it is and how it's used—send for this free booklet "What Every Executive Should Know About pH."

BECKMAN

INSTRUMENTS CONTROL MODERN INDUSTRIES

pH Meters and Electrodes — Spectrophotometers — Radioactivity Meters — Special Instruments

Double Entry

Anahist Co. is now eyeing national distribution of Hist-O-Plus, its new antihistamine-analgesic combination, following successful New England test marketing.

Recommended for both early and late cold symptoms, Hist-O-Plus gives Anahist wider coverage in the cold-treatment field.

Equally important, its analgesic effectiveness may enable the company to dent the $100 million pain-killing business.

Hist-O-Plus contains thonzylamine hydrochloride—one of the first antihistamines, a development of Anahist's parent company, Nepera Chemical Co., Yonkers, N. Y.—and the well-known APC analgesics (aspirin, phenacetin and caffeine). The new combination is offered as the answer to inadequacies of antihistamines alone beyond the early stages of a cold. Moreover, since headaches, muscular aches, etc. are as much a part of a cold as initial sneezing and stuffiness, the pain-killing feature is a welcome—and sales-getting—addition.

The company claims for Hist-O-Plus the distinction of being the first uncoated tablet of its kind to reach the public. New compounding techniques, details of which are still secret, had to be developed by Nepera Chemical since aspirin is difficult to compound with the other ingredients. Other antihistamine-aspirin tablets on the market,* in contrast to the intimate mixture of Anahist's components, are said to be made of a core of aspirin coated with an antihistamine.

Anahist can point to a report in *Medical Times* for cases in which the new product was used to combat symptoms of both the early and fully developed cold: This type of compound cut the duration of the cold to less than one day for each of 54 volunteers tested at the U. S. Naval Training Station at Alameda, Cal. Also, comparisons with other types of anti-cold drugs, according to Dr. Marvin Ziporyn, U. S. Public Health Service, indicate that this new formula is more effective than standard cold treatments.

More than sniffles: The new compound is more than just a plus-treatment for colds. It lands Anahist Co. in the middle of the pain-killing business, a $100 million market. Hist-O-Plus is being offered for such ailments as simple headache; neuralgic, periodic and dental pain; and minor muscular aches and pains. An appreciable dent in sales of established analgesics for these ills will be a profitable "plus" indeed.

Responsibility for the success of the Anahist operation rests on John Hewitt, vice-president and general manager who joined the company last summer. A Florida-phile, Hewitt is no newcomer to retail sales, for he began his career as a salesman for William DeMuth, manufacturer of pipes and smoker's articles. He has managed Palmolive's eastern division, sales of Pabst Brewing and sales operations of Borden's cheese division. For the past 13 years, he has been vice-president and general manager of Jergens. His experience with drug outlets, in particular, should help the company exploit the "established" aspirin treatment in combination with the now-famous antihistamine treatment for colds.

For its trial run, Hist-O-Plus was recently introduced in the New England area (except western Mass. and Conn.) and western New York. Consumer acceptance of the "Grand Slam Relief for Colds," as the general advertising slogan characterized the product's action, was satisfactory. Its distinctive yellow boxes with prominent brown plus signs are now popping up on druggists' shelves and in doctors' offices in a widespread area.

Price barrier: Advertising promotion now geared to the cold season will push Hist-O-Plus as a pain-killer in the off-season. How successfully it will sell on its analgesic properties alone is a question. The effectiveness of the standard APC formulation is well established, but Hist-O-Plus' price—55¢ for 12 tablets and 98¢ for 30—is high relative to simple headache compounds, and that may limit it to use by consumers willing to pay for a premium product.

JOHN HEWITT: A headache for standard analgesic makers.

The product's antihistamine content, however, may also come into the pain-killing realm if current theories that migraine and related headaches are caused by histamine conditions, are substantiated. With these so-called "histamine headaches," Hist-O-Plus may offer long sought-after relief, and would be far out of the class of standard headache remedies.

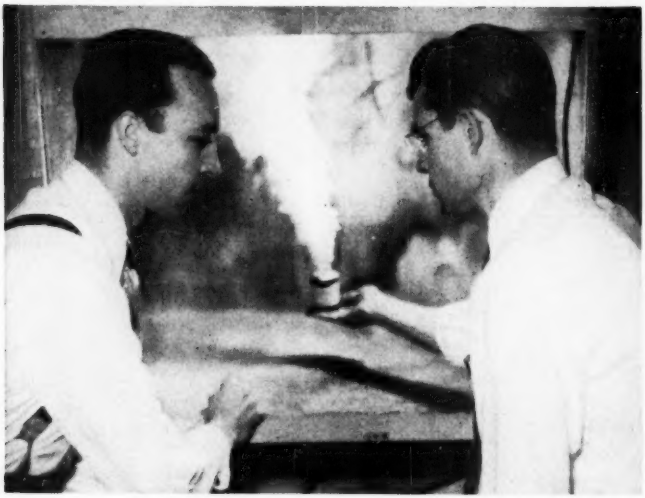
Dry Aerosol

A residual insecticide packaged in a new type of aerosol dispenser is now being produced by Yosemite Chemical Co. It is based on a chemical mixture that decomposes thermally, forming a propellent fog which "steam distills" the active ingredients out of the cardboard container. Although distribution is now local, the San Francisco company hopes to "go national" by 1952.

Dispercide, as the new product is called contains DDT (20%) and chlordane (5%) mixed with the dispersing chemicals. When a starter strip similar to a friction match is pulled, the chemicals begin to generate heat which softens the insecticides, and then they evolve steam and other inert gases which propel them through an opening in the top of the container. The aerosol kills insects in space, and particles of the active ingredients unite to form crystals of increasing size that coat surfaces, giving residual protection for 30 days.

Insects against which the formulation is recommended include flies, roaches, silverfish, fleas, rice weevil, bed bugs, moths, spiders, beetles and

* Hist-O-Plus is at present the only retail antihistamine-APC product with national aspirations.



PEER AND FANCHER: Insecticides are steam distilled.

mosquitoes. It is used in confined areas, with the aerosol fog allowed to remain for at least four hours, but preferably overnight, before the area is aired out. One 2-oz. container will treat 6,000 cu. ft.

The type of generator employed in the new product is the development of two young consulting chemists, Ken Peer and L. W. Fancher. They met as freshmen at the University of California, and after graduating, both went to work in the quality control lab of Columbia Steel. Wishing to strike out on their own, they pooled their money and set up a small independent lab in San Francisco. While the new dry aerosol is their product, Yosemite is handling its commercial development.

Peer and Fancher are awaiting a patent on their work, and consequently can't be specific about the dispersant composition in the generator. It differs from aerosol smokes of the pyrotechnic type, which employ combustible materials with additives of strong oxidizing agents, in that the temperature is lower, seldom exceeding 250° C. This makes such heat-unstable insecticides as DDT, methoxychlor, Lethane, and chlordane available for effective formulation in this mechanism. The insecticides are virtually steam distilled out of the container, for large volumes of steam (which also protect the organic insecticides from decomposition) and inert gases are dispelled. Particle size of the aerosol, however, is larger than that of the older type.

Yosemite is using the economy and simple operation of Dispercide as selling points. It claims that each bomb has about eight times more residual insecticide than conventional aerosol bombs, and points to the throw-away cardboard container and lack of solvents (reason for the term "dry aerosol") as advantages over other means of dispersing insecticides. The company is also suggesting use of Dispercide instead of such fumigants as methyl bromide and hydrocyanic acid.

General industrial outlets in the San Francisco Bay area are now handling Dispercide. It is available in 2- and 8-oz. and 1-lb. sizes. Prices are $26.88 for a case (of 48) of the 2-oz. size; and $24.36 and $42.00 for cases (of 12) of the 8-oz. and 1-lb. sizes, respectively. Principal places where it is presently being used for insect control are warehouses, theaters, stables, restaurants, hide processing plants, box cars, bunk houses and barracks.

A typical application is keeping the stables at Bay Meadows race track near San Francisco fly-free. Stable boys like it, and presumably so do track goers whose favorites save their energy for the stretch run and not for flies. If Yosemite's plans go well, habitues of Jamaica and Tropical Park will be similarly favored, for national distribution by 1952 is the goal.

British Cleanser

First household cleanser to be handled by Crosse & Blackwell, the food distributors, is Chemico, a paste-type material made in Britain by Hill & Co. The product is shipped in bulk to this country for packaging and distribution through Crosse & Blackwell's quality food store outlets. National distribution has been achieved with the exception of some western states where jobbers are now being appointed.

Chemico's sales slogan—"the miracle household cleanser of 1,001 uses"—indicates the wide range of uses for which it is recommended. In addition to cleaning all the usual household articles such as pots, stoves, windows, bathtubs, painted wood, etc., it is suggested for things as diverse as automobiles and dentures. Among the particular virtues claimed for the new product are that it does not scratch, is pleasantly fragrant and is economical. Chemico is not fair traded; suggested sales price is 49 cents for a can slightly over one pound net weight.

Distributing such a product in this country is something new for Crosse & Blackwell, for the only related material sold here is a premium soap priced at three cakes for $1.50-2.00. The company does handle a complete line of household cleaners and soap products in England but at the present has no plans for introducing them in this country.

Moisture Ban

Articles of clothing made water repellent by DeCetex 104, Dow Corning's silicone textile finish developed for acetate, viscose, nylon, Orlon, Fiber V or blends containing large percentage of these synthetic fibers, are now on the market. The water repellent, a high-polymeric silicone of undisclosed identity, is sold as a 65% solids concentrate in a nonflammable solvent primarily to textile finishing plants and mills doing their own finishing.

Canadian Celanese Ltd. is one of DC's customers. Women's raincoats and children's snowsuits are being made of material treated with DeCetex 104, and the military is looking at it for rainwear. Other potential uses: stain-resistant seat covers, suits; quick-drying umbrellas, bathing suits; more durable convertible car tops; sports wear; tenting.

Advantages of the new water repellent: It imparts to each filament a highly water repellent surface resistant to oxidation, soaps, dry cleaning, and wet mechanical action. Application can be made simply from a dilute oil-in-water emulsion in conventional equipment such as a padder or quetch, or from a solution pre-

WATER REPELLENT: Silicones keep her dry.

pared with hydrocarbon or chlorinated solvents. The treatment imparts an improved hand to fabric with no change in color or porosity. Cost of fabric so treated is comparable to that treated with other durable water repellents. Durability is said to exceed that of other treatments on synthetic fabrics.

DeCetex 104 is not yet available for application by dry cleaners or in the home. There seems to be no reason why this cannot be done, but DC has concentrated on the textile industry, has not as yet exploited the other possibilities.

•

Lever building program: Pagedale, near St. Louis, is the location of the new Lever Brothers' manufacturing center, a 27-acre site on which facilities for detergents, vegetable shortening and margarine will be built. Construction crews are just breaking ground for the first unit, a $5 million synthetic detergent (No-Rinse Surf) plant and warehouse that will cover three acres. The company hopes to have this initial project completed by spring of 1952.

•

Barbiturate legislation: Prohibition of sale of barbituric acid and compounds except to wholesale drug houses, chemical houses and dispensing pharmacies and licensing physicians is proposed in a bill (H.B. 195) just introduced in the Arkansas state legislature. It provides for sale only on prescription.

•

More liquid detergent: Sinclair Manufacturing Co., Toledo, has increased packaging capacity for Sprite, its liquid dish-washing detergent; also installed stainless steel storage tanks for alkyl aryl sulfonates at a cost of about $10,000. The latter will permit purchase of tank car lots of raw materials.

•

Insecticide plant starts: Pennsalt has completed its new plant at Montgomery, Ala., is now formulating insecticide concentrates and finished insecticides at that location. Main market: Southeast.

•

Nerve gas antidote: Special Ampins of atropine sulfate, an antidote for nerve gas, are being produced by Strong, Cobb & Co., for civilian use in case of such an attack. The company will start a $5 million plant and research lab in 3-6 months in Cleveland. Its present plant there will continue in operation, with the new unit to be used principally for Ampin production. These devices, developed in cooperation with the Army Chemical Corps, make possible rapid and easy application of the antidote.

•

Tobacco blue mold: Tobacco growers in the Carolinas, Virginia and Tennessee are being advised to treat plants this month with ferbam or zineb to ward off blue mold fungi. Last year this disease made its appearance in mid-February, fully a month ahead of the normal time, and reduced plant stands about 40%, causing a shortage of plants at transplanting time.

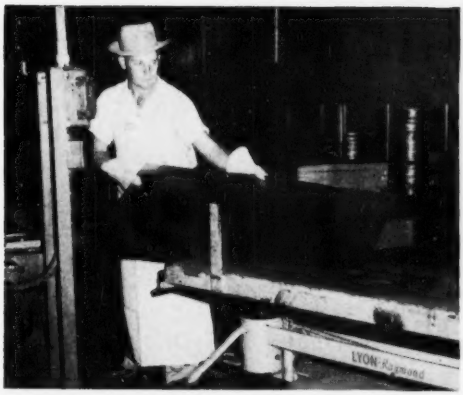
•

Silicone furniture polish: Dri-Glo is the trade name of O-Cedar Corp.'s entry into the silicone polishes field. A solvent-type polish containing no water, it is recommended for general household use — furniture, chrome, enamel and leather. It is not recommended for autos.

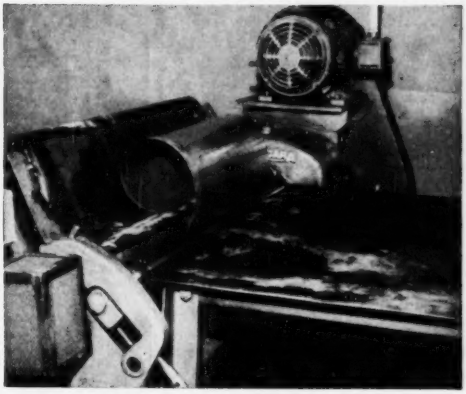
This product of the long-time Chicago household specialties manufacturer was test marketed in Pittsburgh, is now being shipped to many points to complete national distribution by February 20. Distribution is through specialties wholesalers, and direct to grocery, hardware and department stores. A 10-oz. bottle sells for 98 cents.

•

Powdered bleach: A new powdered bleach has been developed by Gordon Chemical Co., Inc., Philadelphia. The product, called V.I.P., is packaged in a 6-oz. jar, contents of which are said to be equivalent to three quarts of liquid bleach. One tablespoon is enough for an 8-lb. wash.



1 PIECES ARE TRIMMED to size. Lyon-Raymond sheet holder and lifter eases handling.



2 SHEETS ARE ROLLED by machine. Steel table at right speeds pieces to next step.

PACKAGING...

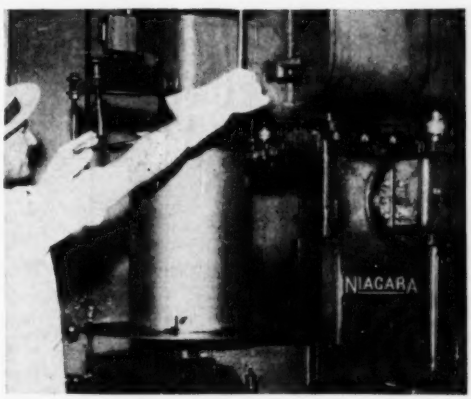
Captive Drums

One way to beat the drum shortage is to make your own (if you can get the material). This week CIW camera visits a shop that does just that. The shop is part of Diamond Alkali plant in Pasadena, Texas.

In a regular shift, 6 men turn out 600 small (or 400 large) drums used for packaging caustic soda.

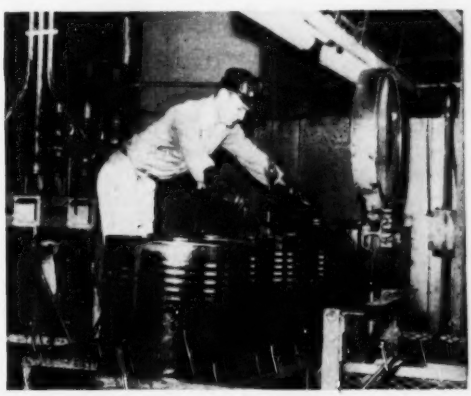
The drums are from 20″ to 35″ high and the diameters range from 15″ to 22″. Small drums are made of 26 gauge steel, sides, and 28 gauge steel top. The larger ones are 24 gauge steel top and sides.

A single lock seam is used to hold flake and molten caustic. But spot welding is used on the large drums holding the molten material.

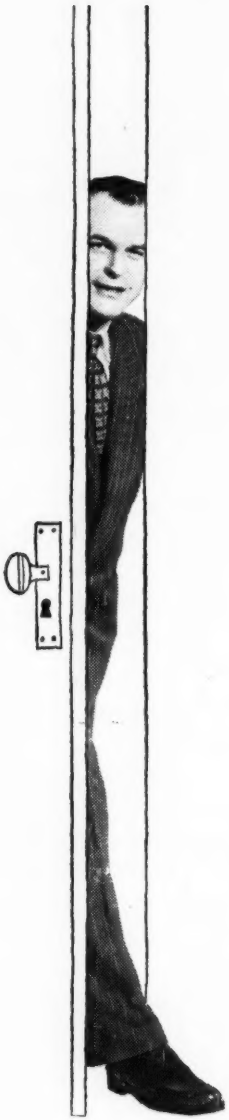


3 TOP AND BOTTOM PIECES are pressed into place at end of drum fabricating line.

4 FILLED DRUMS ARE PAINTED black and bright brand names placed on in water-wash spray booth.



5 DRUM HEADS are tightly clamped with counter weighted device suspended over work station.



"high-light" Kreelon is sales-tested

What do we mean "sales-tested"? Just this. Before Wyandotte "high-light" Kreelon* leaves our plant, it is given a 3-way detergency test. We not only test Kreelon on an "as-is" basis, but also as a "built" product. We test Kreelon not only for soil removal and whiteness retention, but also for promotability with Carbose (Sodium CMC).

Result? When you buy Kreelon, you get a product that you *know* will perform — built or unbuilt. You get a product that's white in color — clear in solution. Yes, you get a product that keeps its foot in customers' doors.

*Reg. U. S. Pat. Off

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA
CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE
HYDROGEN • DRY ICE • SYNTHETIC DETERGENTS • GLYCOLS
CARBOSE (Sodium CMC) • ETHYLENE DICHLORIDE • PROPYLENE
DICHLORIDE • AROMATIC SULFONIC ACID DERIVATIVES
OTHER ORGANIC AND INORGANIC CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
Wyandotte, Michigan • *Offices in Principal Cities*

Wyandotte
REG. U. S. PAT. OFF.

TEAM HUDDLE: Bates (center) confers with aide Markwood, NPA attorney Roger Mullen.

NPA Taps Industry Talent

Bates, Chemical Division chief, continues to recruit key lieutenants from chemical companies' staffs.

World War II experience of "new hires" will help in cutting Washington red tape.

CIW makes an analysis of the role NPA plays in ODM and surveys staff and backgrounds of NPA Chemical Division.

This week Joseph S. Bates, head of the Chemical Division of NPA was busy rounding out his team of administrators for the chemical industry. He appointed three new section chiefs to cover fields not previously assigned to permanent administrators. G. R. Magee will be in charge of dyestuffs and related organic chemicals, Norman Storm will head the drugs and cosmetics section and Alvin C. Goetz will be in charge of the protective coatings section.

Significant is the fact that all three of the new appointees are from industry. The same is true of two other recent appointees, R. P. Kenney and George Sollenberger, whose actual duties have not yet been disclosed. Bates' recruiting plan now seems evident. As rapidly, but as judiciously as possible, he is bringing in industrial talent to handle the various major chemical fields. He is putting heavy emphasis on getting men who only a few short weeks ago were trying to meet control regulations instead of write them.

This bodes good for chemical manufacturers. Not only are the new administrators conscious of the manufacturers' problems but many of them are able to call upon WPB experience gained during World War II. This savvy enables them to do some neat cutting of the Washington red tape that ordinarily strangles even the most noble-minded of new government appointees.

To get a clear picture of where the Chemical Division of NPA fits into the overall defense mobilization effort, this week CHEMICAL INDUSTRIES WEEK made a survey analysis of the scene and the backgrounds of the men who head up the various chemical subsections.

At the head of the whole mobilization pyramid (for all industry) is Charles E. Wilson, Director of the Office of Defense Mobilization (ODM). Wilson gets his power directly from President Truman and carries out most of the powers of the Defense Production Act of 1950. The Defense Production Administration (DPA) is in charge of the actual production portions of mobilization and is headed by W. H. Harrison (who reports to Wilson.).

Priorities and Allocations parts of the Defense Production Act are the direct concern of Manly Fleischmann, a Buffalo lawyer and acting administrator of the NPA. Fleischmann, who has WPB experience, was general counsel for the NPA when it was established and succeeded Harrison on January 24 when the latter became head of DPA.

The Chemical Division is one of a number of divisions set up to handle the specific problems of a pertinent industry. Heading it is Joe Bates, the lead for this story, and no stranger to problems chemical. With his two married sons he operates the Bates Chemical Company, a dyestuffs firm at Lansdowne, Pa.

Bates has been in the chemical industry since he got his Ph.D. at Yale in 1915. But not until he had put in two years as a captain in the Ordnance Department during World War I. Early in World War II he was head of NPA's Chemical Division as a $1-a-year-man. And when General Aniline and Film Corporation was taken over by the government he became its executive-vice-president.

At present Bates puts in a full "five days plus" in a pine floored office in one of the Word War II temporary buildings (known as Tempo T's) on Constitution Avenue.

Observers, even those somewhat cool to Bates, admit that he is a methodical mover who must be impressed with the fairness of a request.

Assisting Bates is Charles C. Concannon, chief of the Chemical Division of the Commerce Department's Office of Industry and Commerce for some time.

Bates' main staff assistant and general trouble shooter is John A. Gosnell, formerly with Coca Cola. Gosnell, a lawyer, was a utility "outfielder" in the Word War II Defense Supply Corporation.

A Programs and Statistics section operates under Francis F. Hoffheins, formerly with the Commerce Department's Chemicals and Drugs section.

Plastics Section is headed by Lowell B. Kilgore, a veteran of running his own businesses for the more than 20 years. During the last war he was with WPB and later with the Commerce Department.

The Alcohols and Solvent section is topped by Frank E. Bennett, former sales manager of industrial products in the New York Area for Publicker Industries, Inc.

Aromatic Chemicals come under the guidance of Louis A. Schlueter, a for-

mer staff member of the American Coke and Chemicals Institute. He is another ex-WPB man. Immediately after the war he was general production manager of Susquehanna Chemicals Company.

Inorganic chemicals come under the eye of Frederick Arden of Mathieson Chemical Company. Arden is a WOC (serves without compensation). As a result, he doesn't even get the customary dollar a year. Two government specialists, Louis A. Markwood and Wesley R. Koster head separate units under Arden. Both are former government men. Markwood specializes on general chemicals and Koster tackles the probems of acids, salts and compressed gases.

One official, not a member of the Chemical Division, but whose work requires that he deal with chemical people, is G. Lyle Belsley. As chief of NPA's Office of Industry Advisory Committees he runs the program under which industry is invited to come down and talk things over with NPA.

Belsley has considerable government agency experience having served in management and executive positions with CPA, NSRB, OEM and the WPB. His job is the difficult one of insuring that every one gets a chance to speak his piece. And in these days of controls and allocations a lot of people wise to government-industry say "he's welcome to it."

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The National Production Authority and Petroleum Administration for Defense, this week agreed on a split jurisdiction to administer provisions of the Defense Production Act.

Under the agreement Interior Department's PAD will be responsible for tetraethyl lead, petroleum cracking catalysts, special inhibitors used for gasoline, lubricating oil additives and other fluids and additives made especially for oil and gas drilling and demulsifiers.

PAD will also be in charge of production and distribution of oil and gas field equipment. It will prepare regulations but NPA will issue orders.

NPA will be responsible for production of carbon black, ammonia, and synthetic rubber.

For a number of petroleum or gas products, PAD will excercise its authority over production but NPA will assume control over distribution. Products include: petroleum coke, chemical grade aromatics (except mixed cuts used for fuels and solvents), insecticides, fungicides, and herbicides, detergents, and plastics.

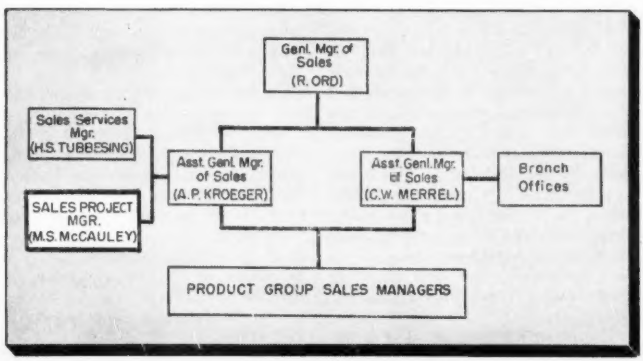
McCAULEY TO KROEGER: "This report tells what we'll have on hand to sell."

Sales Logistics

This week, Monsanto's Organic Chemicals Division looked with an approving eye at its month-old Sales Projects Department. The new addition, charged with the problem of long and short range coordination of sales with production, warehousing and shipping, is more than carrying its weight. And it looks like this "sales logistics" group, as it is termed by the company, has become a permanent Monsanto operation.

The idea of creating a sales logistics section was hatched in the mind of far-sighted Robinson Ord, sales manager of the Organic Chemicals Division. Ord, even before the Korean conflict, saw the growing need for closely planned coordination between selling and the capacity to produce the products which are sold. The days are rapidly drawing to a close, claims Ord, in which a sales executive can say—"let the plant worry about producing the stuff—all I'm concerned with is selling it." This attitude, says Ord, is as unrealistic as a partnership in which one partner makes all the bank deposits and the other writes all the checks without getting together.

Budget balance: The company which carefully budgets production capacity against sales forecasts will come out the winner in any competitive situation, the sales chief believes.



SALES LOGISTICS: Something new has been added to the sales department.

For this reason sales executives have found that they and their men have had to devote more and more time to the problem of production-sales coordination. But this, unfortunately, is an inside job and takes away from salesmens' selling time in the field. Ord feels that he has taken a big step toward getting the salesmen back on the firing line by his creation of the sales projects department and the naming of M. S. McCauley, former production coordinator of the division's biggest plant (John F. Queeny plant at St. Louis) as its manager.

All of McCauley's twenty-five years of experience in jobs ranging from research to production at Monsanto will be needed in the new post. This is especially true in view of present raw material shortages, allocations, and military requirements. On top of this McCauley will also have to worry out the economic disposal of co-products, the materials that often break or boom a process or its principal product. To juggle all these factors, plus the precise scheduling involved, and come out somewhere near an economic balance is McCauley's new job. It's also sales logistics.

Many Steps: But the creation of this new planning section was only an ultimate step in a series of moves that were planned to tie sales and production together. In 1949 Monsanto went part of the way in giving attention to this function by appointing A. P. Kroeger as assistant general sales manager in charge of the important considerations that must precede and follow the actual selling. This was the vital "inside" job. The "Mr. Outside" of this set-up was and is C. W. Merrel, ace salesman and the other assistant general manager of sales in the division, who is charged with the responsibility of coordinating the work of the branch offices.

"Mr. Inside" (Kroeger) works with H. S. Tubbesing, manager of sales services and the newly organized sales projects group under McCauley. Actually Tubbesing's responsibilities begin after McCauley's job has been done. Tubbesing has supervision of all matters relating to the prompt and efficient handling of orders, shipments and invoices through liaison with product sales managers, branch offices, packing and shipping departments, container section and the returnable container section of the sales department. This is in addition to his work on the preparation of sales and expense budgets and the collection of statistical and market data. Recently, Tubbesing has also been put in charge of sales priorities control.

Customers Happy: That Monsanto has gone to great pains to set up a highly streamlined junction between sales and production efforts is evident. As sales chief Ord puts it ". . . to sell and to establish continuing sales relationships, production, warehousing, shipping, and sales must mesh as smoothly as honed gears. The result is the delivery of products where they are wanted when they are wanted and in the amounts committed for. The customer who is served in this way will continue to be a customer."

Bright Future

This week, Paul L. Davies president of Food Machinery and Chemical Corp., outlined the company's financial standing for 1951, and plans for expansion. Occasion was meeting of New York Security Analysts.

After a relatively poor showing in 1949, the company staged a definite comeback. For the first time Westvaco Division contributed substantially to the earnings and it is expected that the division will make an even larger contribution in 1952.

At the end of last year, Food Machinery had $17.5 million in cash, a net working capital of over $48 million and a net worth of $75 million.

Total sales amounted to $100 (51% of that was contributed by chemical activities), and net earnings for the year—allowing for 6 months excess profits tax—will be aver $3 a share.

The sales for the year represent an increase of $14 million over 1949. The earnings compare with a figure for 1949 of $1.72 per share.

The sizable increase is reflected in the fact that Westvaco did a flourishing business. The company was acquired in 1948 and brought into the organization because of its position in chlorine, caustic soda, and phosphorous. Earnings did not grow with expanding volume, however, and the $1.72 figure in 1949 was a new low for the company.

Many of the chemicals which are in short supply now were flooding the market then. In its first full year as a part of Food Machinery, Westvaco earned only 4% of the investment made on it.

Expansion: Because of its experience gained in the last war Food Machinery has obtained a contract, estimated at over $40 million, to produce land tanks for the army. Other defense commitments—bomb clusters, decontaminators, and various pumps —total $20 million.

Some time this weeek, stockholders of Ohio-Apex will vote on an agreement whereby Food Machinery will absorb this company into its operations. Ohio-Apex produces fine chemicals for the plastics industry among others, and will serve as an outlet for raw materials made by Food Machinery's chemicals division. All reports point to a successful consumation of the deal.

The expansion program will cost over $25 million. To provide funds for the immediate future, the company is arranging to increase its outstanding debenture by that amount. In a long range plan, stockholders may be offered the right to purchase new shares. This action won't be taken before the end of 1952 or 1953.

In making long term budgets (5 year) company officials estimate that machinery volume of sales might increase 50%, leased machinery 100%, and chemicals 120%. In terms of total volume at the end of 5 years this would mean: machinery 28%, leased machinery 5% and chemicals 67%.

Security Check

The Facility Security Survey form, recently developed by the Munitions Board to check on the internal and external security of plants having military contracts, got the close attention of security-conscious chemical managements this week (CIW, Feb. 3, '51). **The new form, when properly filled out, is designed to show experienced eyes the exact points of any manufacturing plant that are vulnerable to sabotage.**

A specially trained group of officers selected from the various branches of the armed forces will use the new check-sheet to examine the installations over which their individual arms of the service will have control.

Like most government-authored questionnaires the new form (DD 395) asks a lot of questions—but to a noteworthy end. Queries on fencing and the protection given critical areas such as transformers, water tanks, pumps, communications centers and switchboards occur frequently throughout the form.

In addition, the survey check-list and the officers who interpret it will try to estimate the effect on production output of the loss or damage of critical producing areas in the plant under consideration. Based upon such a diagnosis, recommendations will be made for changes that will help protect the plant or make it easier to put back into operation as soon as possible after attack by an open or secret enemy.

The shortage of fuels and raw

materials occupies one of the major portions of the form. The questions here are concerned with whether or not fuel is stored in well compartmented areas and how much of such fuel is kept on hand. Safeguards against the contamination of raw materials are also measured. Similarly, the primary and alternate means of transportation of fuel and raw materials into the plant is given the twice-over from a security point of view.

Quite "personal" questions are asked of the management involved in the sections dealing with production and basic security factors. Current and planned production data requests are prominent as well as queries about whether or not the company is foreign owned, under foreign control or the parent of foreign affiliates. The plant management's ability to segregate classified work and the strength and quality of the guard force on hand to protect it, are other items the form considers.

Questions about intra-plant communications setups cover everything imaginable, from messenger boys to short wave radio. And, inter-plant communications from telephones to teletypes get a thorough going over.

The formidability of the plant as air-raid shelter is examined in the light of its wall thicknesses, type of construction, total thickness of overlying concrete floors and even the depth of various sections of the plant below ground level.

Plant drinking water also comes under the eye of the probing form. The source of its supply, the identity of the chlorinator and the frequency of potability tests are some of the questions on this point.

Personnel training against chemical, biological and radiological warfare is also evaluated. And, the use of literature pertaining to the treatment of casualties provides another check point.

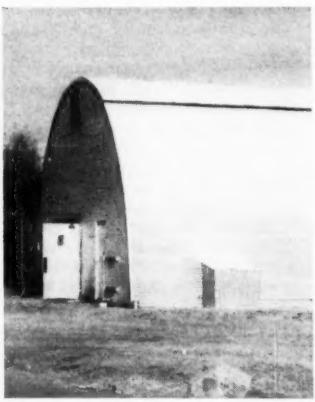
Near the end of the questionnaire there is a section in which the topography of the plant's surrounding landscape is analyzed. This goes to the extent of asking whether the terrain within a 3 mile radius of the plant is level, hilly, mountainous, cut by valleys or adjacent to deep (100 ft.) water—Form DD 395 seems to cover just about everything from top to bottom.

Whether or not the plant area is subject to flooding, hurricanes, earthquakes, tidal waves or other whims of nature rounds out the topography section. But what about invasions by locusts?

CARNIVAL TENT: Breakfast is served, five days after the fire.

Quonset Cafe

A fire in a coffee shop put the American Chemical and Potash Company in a position to paraphrase the old saw, "He who does not eat does not work . . . well." This week, after a series of makeshift remedies the company installed a $25,000 quonset



QUONSET HUT: Until next summer, the company cafeteria.

hut which will serve as a restaurant until the coffee shop is rebuilt next summer.

The Trona coffee shop was the only restaurant and principal eating place for employees of the company's plant in Trona. It burned down in October and the firm officials immediately realized that a morale problem would follow. They realized also they would all have to hunt for a new place to eat—the coffee shop was patronized by employees at all levels.

First step was to inaugurate a free shuttle bus service to nearby Argus and to talk proprietors of the few small eating places in Trona into lengthening their hours of service.

Second step was to rent a tent from a concessionaire in Santa Monica and to line up all the equipment necessary to start the improvised cafeteria. They were able to get all the equipment on short notice in Santa Monica except for the kitchen range; the community church pitched in and supplied them with that necessary item.

Within five days of the fire the tent was up, equipment installed, and the cafeteria ready for business. On the first day, 300 people showed up to eat breakfast at the old stand.

Now that the quonset hut is installed the company can sit back and philosophize. One thing they learned from the experience is that an army isn't the only one to travel on its stomach.

FOREIGN

Poland: In its decision to establish a ministry of Chemical Industry, the Polish government is so closely following the Russian pattern as to suggest that the Soviet Authorities have at least dropped a hint that such a development would be looked on with favor.

Russia is actively participating in the current expansion of Polish chemical industry by providing equipment and technical aid. It is a safe bet that the Soviet is taking precautions to assure that Polish expansion proceeds along a line which fits in with Russia's own plans.

In the inter-war period Poland de-

veloped an extensive nitrogen fixation industry. The industry is to be expanded further and Poland will inaugurate synthetic rubber and synthetic fuel industries.

•

Japan: An acute shortage of industrial salt is being felt by Japanese industry. Kyodo news agency gives 2 reasons—shortage of sterling and non-arrival of 160,000 tons of salt from communist China.

To remedy the situation, this week the Japanese authorities placed salt on the list of goods imported under the "Automatic Approval System."

Requirements for the first quarter of 1951 are estimated at 550,000 tons. Imports for the period will be 300,000 tons, and stocks on hand amount to 100,000 tons. It adds up to a deficit of 150,000 tons.

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England: Yardley and Co., Ltd., the famous soap and perfume producer, has purchased a large, single story factory at Hunt's Cross near Liverpool. The factory was enlarged and re-equipped a few years ago—it has a production space of 38,000 square feet.

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Norway: The chemical concern, Norsk Hydro, has completed its new factory at Heröya, South Norway, for the manufacture of urea. Full production has begun at a rate of 30 tons per day, equivalent to 10,000 tons a year.

In addition to the normal uses of urea (plastics, glues) Norsk Hydro will use the urea to produce fertilizer. Fertilizer is particularly suited for exports to markets where freight charges are high because of its high nitrogenous content.

EXPANSION

Columbia Carbon: A furnace type carbon black plant will be built in El Dorado, Arkansas. Plant will have an annual capacity of 36 million lbs. and will cost about $1.5 million.

•

Reichold Chemicals: An option has been taken on a 42 acre plant site at St. Therese, 20 miles north of Montreal. Plant will produce synthetic resin adhesives for the plywood industry. Export business will be considered as the site is close to port of Montreal.

Reichold will build a plant in Charlotte, North Carolina, which will serve as headquarters for company's Central Atlantic division. Plant will cost in the neighborhood of $1 million.

Gulf Oil: New $12 million ethylene plant will be constructed at Port Arthur, Texas. An 8 in. pipe line will carry the gas to Ethyl plant at Deer Park. Site of plant will be within or near company's refinery.

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Commercial Solvents: New plant for producing Baciferm (bacitracin antibiotic feed supplement) is complete and first shipment made. Another unit at the plant for making vitamin B_{12} supplement is expected to be in operation shortly. Plant is located in Peoria, Ill.

Company says Baciferm stimulates growth and reduces mortality of poultry and swine. It contains a minimum of 5 grams of bacitracin per pound.

•

Dominion Tar and Chemical: A contract for constructing new plant in East Montreal has been awarded. Plant will produce glycol. New facilities for extracting ethylene will also be built.

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Oregon State College: A portable plant designed to affect material savings in the stream extraction of oil from peppermint will go the rounds of mint fields in Oregon. The college has received a grant from the Wrigley Chewing Gum Co. to carry on the work.

Preliminary estimates say that consumption of steam used in the fields can be cut by about 25%. Requirements for water needed for condensing the oil stream vapor mixture can be reduced 40 or 50%.

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U.S. Lime: Los Angeles officials of the company say that newspaper stories stating the company would build a new plant in Portland were "premature." But CIW has learned that plans for the project are underway. The plant will be larger than any of the three Nevada and one California plants now operated by United.

Supplies will come from deposits of raw limestone near Edna Bay, Alaska. Significantly, water shipment will be cheaper than rail hauling from nearby California deposits.

PEOPLE

Russel M. Riggins is elected president of McCarthy Chemical Corporation, and New Ulm Corp. He will succeed Glenn H. McCarthy who was made chairman of the board.

Riggins, who has been connected with the oil industry for over 30 years, formerly served as vice president of Phillips Petroleum and comptroller for Parke-Davis.

In other moves in the company, Hugh V. Miller is new vice president in charge of operations; A. G. McNeese, vice president; John B. Anderson, secretary; and Clyde C. Rogers, assistant secretary.

•

Dr. William H. McLean is appointed vice president, marketing for Merck. He had been chairman of the marketing committee.

McLean came to Merck in 1948. He had previously held executive posts with several companies, and during the war was in charge of research and development for Army Quartermaster Corps.

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H. C. Little is named director of employee relations for American Cyanamid. He had been a member of the employee relations department for 10 years, and has been with Cyanamid for over 20 years.

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Harry K. Clark accepts appointment as vice chairman of the Munitions Board. Clark, president of Carborundum, has received leave from the company.

In his new office, Clark will coordinate activities for the office of Military Production, Office of Facilities and Construction, Office of Manpower and Industrial Security, and Aircraft Petroleum and Electronics Divisions of the Munitions Board.

During the last war, Clark served on Advisory Board of Defense, the Office of Production Management and the Munitions Board.

•

Arne Olson will head resins and plastics department for Blaw-Knox.

Control Roundup

Within the next few weeks all chemicals will be under some form of control. Many are under substantial "guidance" through NPA's anti-hoarding and allocation regulations. But actual distribution control orders, similar to the controlled materials plan (CMP) of World War II are in the works. First to come will be orders on sulfur, benzene, and chlorine.

The NPA is in an unenviable position—all its actions can't add one pound to national productivity. The best it can do is to distribute shortages. Whether the allocations actually help smooth the path of production remains to be seen. They apparently do help get some material into military production channels.

Chemical controls: Scarce chemicals first went under NPA control on September 18, through NPA regulation No. 1 which provided for a practical working minimum inventory.

On December 28, twelve chemicals —benzene (carbon tetrachloride, dichloro-benzenes, glycerine, methanol, methyl chloride, methylene chloride, phthalic anhydride, polyethylene, styrene and polystyrene, titanium pigments, and trichloroethylene) were made subject to anti-hoarding provisions of the Defense Production Act. A number of metals and minerals of importance to chemical manufacturers were included in the notice.

On January 11, NPA added industrial alcohol and chlorine to the list. Also added were other strategic items such as zinc dust and oxides, natural and synthetic rubber, paper and pulpwood.

Chlorine: This was the first chemical to come under an NPA order. Under Order M-31, NPA on January 23 instructed producers and distributors to fill all orders for water and sewage treatment purposes, both public and private. They must fill all orders up to 100% of their 1950 deliveries but are not required to deliver more than 25% in any one month. No more than 10% of any month's production will have to be turned over to DO-rated orders.

Methylene chloride is subject to a special order (M-21) which permits only the "paint remover grade" to be used for making paint removers and dry cleaning aids. Refined grades can be sold on written certificate that such type will be used for making photo film only.

Benzene: An order similar to M-31 is in preparation. It is expected the order will similarly order distribution among certain users and set up a system of percentages on DO orders. The NPA has appointed an industry advisory committee of producers and users which reported that demand for benzene in 1951 will be 252 million gallons—supply will be 200 million gallons. The group has asked NPA to consider recommending construction of facilities to produce 88 million gallons a year from petroleum.

Sodium bichromate: An industry advisory committee met on January 16. Lack of transportation between South Africa and U. S. ports is the cause of shortage here. Producers recommend that government owned ships be used to haul government cargo so that commercial shipping space would be available to transport the ore from South Africa.

Sulfur: A shortage of sulfur will be felt this year. Demands are shooting up and production will not be able to keep pace. Exports have been cut 30%, and domestic users have been cut from 10% to 20% on a voluntary basis. A complete embargo on exports would solve the problem for this country at least. There is enough sulfur above ground to meet demands for 6 months; this has dwindled from an 18 months supply.

Pigments: Five task groups, organized on January 9, are now studying supply and demand, and impact of DO rated orders. Titanium pigment shortage is result of sulfuric acid shortage. NPA says sulfur producers are voluntarily allocating customers 85% of current contracts.

Pesticides: Producers say they have capacity to meet all demands. But they are having trouble getting raw materials such as benzene, chlorine, copper, sulfur, and arsenic.

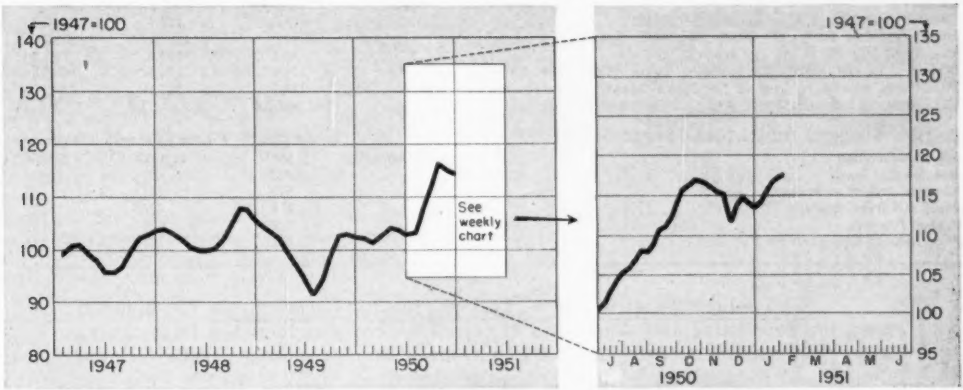
At the suggestion of the pesticide industry advisory committee which met on January 23, task groups were appointed to study various aspects of producing arsenical poisons, benzene hexachloride, and 2,4-D.

There is some inequitable distribution of DO-rated orders among producers. NPA expects to solve this problem by an order in the near future to get rated orders on a percentage basis.

Barium carbonate: An industry advisory committee met early last month to discuss this chemical. The committee will give NPA production and other figures. NPA will issue orders after the figures have been submitted.

Object of the order will be twofold; it will grant better distribution of DO-rated orders among suppliers. It will also serve to get a better distribution of supply among users.

CHEMICAL MARKETS...



CHEMICAL INDUSTRIES OUTPUT INDEX—Basis: Total Man-Hours Worked in Selected Chemical Industries

First reports indicate a partial success for the price control program. The Office of Price Stabilization is too busy to add further regulations, and most buyers and sellers are too confused to make a move. Several commodity exchanges have been closed temporarily until bulls and bears figure out their identities.

Development of a new sulfur mining process by Chemical Construction Corp. in Colombia is big news. With only a 15 year Frasch-minable sulfur reserve in the United States, improved recovery of extensive surface sulfur deposits here and abroad will improve supplies, and restrain the inflated prices of Italian sulfur producers, who are rumored to be asking—and getting—as high as $140 a ton.

Happy motorists won't have to "get out and get under" as frequently as they had to in tire rationing days. More tire-prized cold rubber GR-S will be made this year at the instigation of Sen. Lyndon Johnson of Texas and the Senate Armed Services Committee. With the authorized increase, a total of 340,000 tons of the cold stuff will be produced—about 40% of the 1951 goal for synthetic.

Gasoline supplies should be ample, but PAD is set to clamp down on octane number to conserve needed tetraethyl lead supplies.

Fabulous prosperity has reached the Antipodes on the crest of sky-high wool prices. But even in the midst of this South Pacific bonanza, some wool growers are given pause at rapidly growing acceptance of year-round clothing made of rayon and synthetic fiber blends.

Industrial expansion has a few downs even on the way up, as plastics fabricators have learned. A slight but general decline was noted in most finished plastics production in November compared to October, according to U. S. Tariff Commission figures. The dip can be partly attributed to seasonal factors, but primarily to the conversion from business-as-usual to a mobilized economy.

Advent of the "tinless tin can" for non-food use may raise eyebrows among language purists. But this development by American Can Co., aptly dubbed Operation Survival, may mean just that to many hard-pressed manufacturers; at the same time, Uncle Sam will be less dependent on tin supplies from distant Bolivia and Malaya during altercations.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	117.6	117.4	100.8
Bituminous Coal Production (Daily Avg. 1000 Tons)	1896.0	1860.0	1250.0
Steel Ingot Operations (% of Capacity)	96.7	101.3	87.3
Wholesale Prices—Chemicals and Allied Products (1926=100)	144.9	144.9	115.8
Stock Price Index of 14 Chemica Companies (Standard & Poor's Corp.)	219.1	213.1	160.8
Chem. Process Industries Const. Awards (Eng. News-Record)	$22,190,000	$59,172,000	$2,256,000

MONTHLY BUSINESS INDICATORS—EMPLOYMENT		Latest Month	Preceding Month	Year Ago
All Manufacturing	(Thousands)	12,975	13,022	11,504
Non-Durable Goods	"	5,765	5,832	5,543
Chemical and Allied Products	"	520	521	484
Paper and Allied Products	"	428	426	390
Rubber Products	"	222	221	187
Petroleum and Coal Products	"	192	191	185

With solid support by the U. S. Department of Agriculture for bumper crops, the production and allocations of pesticides are assuming top importance. Those twin bugkillers, BHC and DDT, have been running closely parallel in production, and demand for both well exceeds available supply.

U. S. Tariff Commission production figures for November are 5.8 million lbs. for BHC and 5.3 million lbs. for DDT.

LPG—one combination of initials not allocated yet—shows continued vigorous growth. This liquefied petroleum gas (propane and butane) is making considerable progress as motor fuel for heavy equipment, trucks, and busses. With fleet owners intrigued by prospects of operating economy, these bottled hydrocarbons are expected to capture somewhat over 5% of the gasoline market.

Mirroring both industrial expansion and higher consumer standards, soap and detergent sales last year show a 12% increase over 1949, based on reports by the Association of Soap and Glycerine Producers.

Eyes of soap makers can now take a well-deserved rest from following tallow price gyrations. Starting with an OPA ceiling of 8.6¢ a lb. in 1945, the price rose to 26.2¢ in March 1947, plummeted to 5.2¢ in April, 1949, then remained fairly steady until June, 1950. Since Korea, prices rose sharply and are now reasonably well stabilized around the 18¢ mark.

Some non-defense consumers are shedding real glycerine tears over supply prospects. A record production total of 220 million lbs. was set in 1950 compared to 194 million in 1949, but users want still more. Synthetic glycerine production by Shell Chemical in Houston amounted to around 35 million lbs. last year, is slated for a 50% capacity boost in 1951. Several other companies are showing strong interest in entering the synthetic glycerine field.

Chemical manufacturers and consumers don't have all the headaches. Importers face rising import prices and fewer supplies in a ceilinged domestic market. Exporters contend with quotas, increased foreign competition, and the prospect of opportunists speculating in the resale market.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending Feb. 5, 1951

UP

	Change	New Price		Change	New Price
Casein, imported	$ .005	$ .41	Gum Arabic, amber sorts	$.005	$.155
Castor Oil, dehyd. bodied, c.l.	.025	.415	Gum Tragacanth, No. 1	.15	4.75
Cocoa butter	.01	.81	Sesame seed, Nic., natural	.01	.22
Coconut oil, West Coast, tank car	.005	.205	Soybean Oil, crude, tanks	.005	.215
Copra, Pacific ports/ton	3.00	265.			

DOWN

Carnauba Wax, No. 1 yellow	$ .01	$1.37	Quicksilver (76 lb. flask)	$2.00	$217.
Cassia	.005	.185	Sandalwood Oil	.50	12.00
Clove	.01	.44	Sodium Stannate	.01	1.01
Glycerine, saponification	.04	.46	Tallow, yellow	.005	.175
Orange Oil, Calif., ctns.	.10	2.00	Tin	.01	1.83

Prices per lb. unless quantity is stated

BOOKS . . . . . .

Process Heat Transfer, by Donald Q. Kern. McGraw-Hill Book Co., New York, N. Y.; xii+871 pp., $8.00.

The object of this text is to provide fundamental instruction in the calculations, derivation, and empirics of heat transfer patterned after the requirements of the practicing process engineer. The fundamentals of heat transfer are developed within the actual equipment and flow patterns in which it occurs in the majority of industrial operations. In order to aid the student in his trial-and-error calculations, all calculations are treated as interrelated occurrences between hot and cold agents through a single surface. In accordance with the author's inclusion of the practical aspects of the subject as an integral part, he presents solutions for the numerous representative problems arising in the chemical and mechanical process industries; it is a relatively complete manual for solving the problems of thermal design.

This practical approach, however, is always intended as a supplement rather than a substitute for basic engineering principles. The subject matter is covered, as far as space allocations are concerned, commensurate with its incidence and importance in industry.

Applied Nuclear Physics, by Ernest Pollard and William L. Davidson. John Wiley & Sons, Inc., New York, N. Y.; ix+352 pp., $5.00.

Revised and expanded to include the developments in the field since 1942, this edition intends to give a balanced picture of nuclear science and technology as they exist today. Special sections have been devoted to pile theory, neutron diffraction, cross sections, and cosmic rays. An additional chapter on nuclear reactions appears. Instructions for laboratory experiments in nuclear physics are also included for the first time.

The technical aspect of nuclear science is emphasized in this book for it aims to provide the essential facts in such a way that scientists and engineers may apply the techniques of nuclear physics to research problems with some facility. The authors describe and explain the basic facts concerning nuclear particles and radiations and methods of accelerating them, transmutation, natural and artificial radioactivity, isotopy, and nuclear fission. Selected references are supplied at the end of each chapter, and the appendixes tabulate many of the nuclear properties of isotopes.

Fluorine Chemistry, Vol. I, edited by J. H. Simons. Academic Press, Inc., New York, N. Y.; xvii+615 pp., $12.00.

This is the first of two volumes written by a group of experts to meet the rapidly expanding interest in fluorine and its compounds brought about by recent research and development. All the aspects of the basic chemistry of fluorine are collected in this set of two volumes with each author covering that branch of the subject in which he has special knowledge or has made significant contributions.

The various types of fluorine compounds are described in this book. The first two chapters of the book deal with the nonvolatile inorganic fluorides and the volatile inorganic fluorides. Since large numbers of volatile inorganic compounds form a class of substances not duplicated by any of the other halogens such as halogen fluorides, boron trifluorides, and hydrogen fluoride, individual chapters are devoted to each of them. Special emphasis is given to the fluorocarbons and the fluorocarbon derivatives; their methods of production, properties, and wartime development are thoroughly discussed. A chapter on the theoretical aspects of the subject also appears in this volume which treats fluorine chemistry as a unit.

Briefly Listed

BACTERIAL POLYSACCHARIDES — THEIR CHEMICAL AND IMMUNOLOGICAL ASPECTS, by Martin Burger. A 273-page volume treating those polysaccharide substances which are related to infection and immunity. Published by Charles C. Thomas, it gives data and methods of isolating carbohydrate bacterial substances and emphasizes the uses of these carbohydrates as diagnostic agents. Bannerstone House, Springfield, Ill. $6.00.

FBI REGISTER OF BRITISH MANUFACTURERS—1950-51, 852-page industrial directory in its 23rd edition providing cross-section of the most important producers of British goods in a wide range of industry, with the purpose of promoting Britain's export trade. Published for the Federation of British Industries, by Kelly's Directories, Ltd. and Iliffe & Sons Ltd., Dorset House, Stamford St., London, S. E. 1.

A. S. T. M. METHODS FOR CHEMICAL ANALYSIS OF METALS, 1950 edition contains 39 extensive standards, containing all of previous methods for chemical analysis in this field supplemented by many new testing procedures which the committee has studied and the Society approved. Copies can be procured from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. Cloth bound edition is $6.50; interleaved copies are $9.00.

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(Classified Advertising)

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2 Worthington Vacuum Pumps 6½ x 6

2 Spencer Gas Boosters, Stainless, 600 CFM @ 80 oz. pr.

4 Selectro Vibrating Screens, 2' x 7', two deck, enclosed, stainless steel.

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BOOKLETS . . . . . .

Chemicals

Acetyl-p-Aminophenol

6-p. bulletin discussing acetyl-p-aminophenol as drug to be used wherever analgetic-antipyretic action is desired on the basis of its effectiveness and its complete absence of toxic reactions. Sumner Chemical Co., Inc.

Adhesive Emulsions

Data sheet covering a series of general purpose adhesive emulsions that may be used alone or may be further compounded for obtaining water-proof bond of paper, fabrics and leather to themselves, or to glass, metal, paint, asphalt, cork, wood, and plastic. American Resinous Chemicals Corp.

Glacial Acetic Acid

Niacet bulletin No. 1 presenting in detail the physical and chemical properties, latest specifications on the standard C. P. and U. S. P. grades in addition to shipping and handling information on this well-known chemical. Niacet Chemicals Div. Union Carbide & Carbon Corp.

Protective Coating

Bulletin on a new coating called Carbo-Kote 6020 describing acid-solvent-alkali resistant tank and duct linings and floor covering material which is applied by brush. Carboline Co.

Chemicals

Publication, "Collective Volume II," compiling data on several new chemicals which have become available from the firm's research laboratories during the last year, and on which separate bulletins have been issued. American Cyanamid Co.

Equipment

Centrifuges

10-p. illustrated bulletin explaining the operating principles and applications for two types of high speed horizontal centrifuges to continuously remove solids from slurries and suspensions. Designed to permit direct comparison of design and function of both the conical and cylindrical types of centrifuges, there are cut-away machine drawings and data on the main features and specifications of each. The Sharples Corp.

Processing Equipment

Miniature booklet containing compilation of reproductions of standard sized bulletins put out by the firm covering their line of crushing, grinding, separating, elevating, conveying and mixing machines. Sturtevant Mill Co.

Water Demineralizers

Folio on water demineralizers containing catalog sheets and information concerning synthetic resins and ion exchange resin systems; each catalog sheet carries illustration and working diagram of a single model in addition to both a "Specifications Chart" and a "Performance Chart." Penfield Manufacturing Co., Inc.

Stainless Steel

Slide chart presenting technical data and information on workability of stainless steels, including a standard analysis table of stainless steels and relative fabricating data on the steels for a variety of operations. The Carpenter Steel Co.

Mixer

Bulletin describing three-part mixing machine specifically designed for handling the heavier loads resulting from mixing tougher stocks at higher speeds. Farrel-Birmingham Co., Inc.

Valves

112-p. catalog listing the entire line of bronze and iron body valves, including photographs, dimensional diagrams, price, weight, sizes and dimensions. An additional section covers accessories and engineering data. Stockham Valves and Fittings.

Packings and Piston Rings

40-p. catalog devoted to all types of packings and piston rings and their applications with special attention given to new developments in the carbon-bakelite process. France Packing Co.

Paper Bags

20-p. illustrated booklet entitled "Multiwall Packaging Guide" dealing with the storage of empty bags, filling, closing, and handling of filled bags, palletizing and related topics. Bemis Bro. Bag Co.

Pyrometer Equipment

8-p bulletin covering the advantages, construction details, and industrial applications of the firm's line of pyrometer equipment to be used wherever heat is used to process materials. General Electric.

Speed Reducers

Illustrated folder discussing the various types of worm gear speed reducers featuring one single type of drive, the compact right-angle drive. The Cleveland Worm and Gear Co.

Electromagnet

4-p. folder outlining typical characteristics, special features and research applications of firm's new research tool, an electromagnetic unit for producing high flux density magnetic fields. Arthur D. Little, Inc.

Boiler Water Testing

Bulletin discussing equipment and reagents used for conductometric determination of solids in boiler water and steam. Hall Laboratories, Inc.

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